A

TREATISE

ON THE

NERVOUS SCIATICA,

OR,

Nervous Hip Gout.

THE learned Baron *Van Swieten*, in his Commentaries on the Aphoriſms of *Boerhaave*, takes occaſion to mention and quote ſeveral paſſages from this Treatiſe; and beſtows high commendations on it; and in his laſt volume *de Rheumatiſmo*, ſays,—*Cotunnius duas ſummas Iſchiadis ſpecies diſtinxit; alteram in qua dolor, fixus in coxa ulterius non excurrit: alteram vero, in qua ſubjectum læſæ coxæ pedem continuo tractu propagatus attingit. Ultimam hanc Iſchiadis Nervoſæ nomen mereri judicavit egregius Auctor, cujus tractatus de hac re editus ab omnibus legi meretur.*

De Rheumatismo, Comment. Aphor. 1494, p. 683.

Cotugno,

A TREATISE ON THE NERVOUS SCIATICA, OR, Nervous Hip Gout.

BY

DOMINICUS COTUNNIUS, Phil. & Med. D.

LIBERTAS, QUÆ SERA TAMEN RESPEXIT INERTEM,
RESPEXIT TAMEN, ET LONGO POST TEMPORE VENIT.

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A

TREATISE

ON THE

NERVOUS SCIATICA;

OR,

Nervous Hip Gout.

HENRY CRANTZ

TO THE

READER.

THIS anatomic-practical Treatiſe of that learned and ingenious Neapolitan Phyſician, Dominicus Cotunnius, (in which, amidſt a number of uſeful precepts, he has pointed out a happy and radical method of cure for the diſorders of the Hip) ſtands in no need of any praiſe, or prefatory countenance from me, or any other perſon; ſince the good wiſhes and prayers heaped on the Author, by the multitude that he has ſucceſsfully freed, in this country, from ſo excruciating a torture, are more than ſufficient teſti-

monies of its merit. However, as I was unwilling my approbation ſhould be totally ſilent, I could not reſiſt the temptation, in this opportunity, of giving ſome ſmall token of the reverence and eſteem I bear that famous man; and alſo of my attention and regard for my pupils, who have impatiently waited for the publication of this Treatiſe.

TO THE

MOST ILLUSTRIOUS AND NOBLE

PATRONS, AND GOVERNORS,

OF THE

Great Neapolitan Hoſpital

OF

INCURABLES.

GENTLEMEN,

IN the courſe of thoſe obſerva-tions, which I made in the Hoſpital over which you preſide, and which more particularly were directed to the inveſtigation of that ſpecies of Sciatica, which ſo cruelly harraſſes the patient, and ſo often

 obſtinately

obſtinately reſiſts expulſion from the nerves; I lately (as an opportunity offered for relaxation from that attention which I paid to the progreſs of diſeaſes, for ſo many months in the preſent year) reſolved to digeſt, and throw my remarks into a methodical order, and ſo preſent them to the public. For, imagining that they might in ſome meaſure be ſerviceable to mankind, I ſought with eagerneſs, in this publication, for a pretence to be idle. But when I had prepared theſe fruits of my leiſure hours ready for the preſs, I was unwilling that this my firſt offspring, born under your roof, ſhould be ſent abroad into the world, without your knowledge, and without the protection

tection and countenance of ſome illuſtrious patrons. For I was not a little fearful leſt the number of ſhallow-minded men, abounding in the world, who are very induſtrious in ſtripping every compoſition of merit, ſhould imagine that I was not ſollicitous in bringing you acquainted with it, as though I thought it could receive little augmentation of its conſequence from your favour. This imputation would ſit very ill on my ſhoulders, as, at this particular time, no heavier charge could be brought againſt me. For, amongſt the motives which urged me to haſten the publication of this work, the moſt cogent, and what I had chiefly at heart, was, to prepare for myſelf an honourable opportunity

of addreſſing you publickly, and by this, my principal work, overthrow the calumny of my enemies. For I ſhould deſervedly be reckoned the moſt ungrateful of human beings, if I did not endeavour to the utmoſt, to acknowledge publickly the lively ſenſe I have of thoſe favours I can never forget, nor ever repay. For I remember that from the time in which you nominated me to the office of Phyſician of your hoſpital (during the ſpace of ten years) you have omitted no opportunity of laying on me additional obligations. But above all, I now, and ever ſhall remember your great kindneſs towards me, in appointing me, when I was ſcarce three-and-twenty years old, to that important province of reading

reading lectures in the Royal Academy, to a ſelect number of pupils in Surgery; a ſtudy that draws ſuch multitudes to the hoſpital. Since, before me, no one was ever appointed by you, except a man diſtinguiſhed above others for his learning; and ſince I, who was ſo young, was preferred before many famous men to this important truſt, it is a ſufficient indication of the notice you was pleaſed to take, not of my abilities, but my diligence and aſſiduity; in which I ſtrove not to be outdone by any one. What care I have taken to prove myſelf not unworthy of this your good opinion, is not my province to exemplify in my own bare aſſertions,

as it is not in my power to corroborate them by the univerſal teſtimony of thoſe pupils who have attended my lectures, either of ſuch as belong to the Hoſpital or not. For all thoſe who have attended, partly, the public and private lectures, which I have read for almoſt ſeven years; and partly the chirurgical and anatomical demonſtrations in diſſections, know very well what pains and labour I took, with a view to incite young minds to ſtudy, and apply themſelves with diligence in their calling.

And, although theſe were not obſcured, or hid from your penetrating knowledge, I yet often wiſhed

wiſhed to produce ſome public teſtimony and monument of them before your eyes. For I can ſcarcely expreſs how ardently I have wiſhed to convince you, that I have ſtrove to the very utmoſt of my power and abilities (would thoſe abilities were ſuch as not to fall behind your kindneſs and the dignity of my office!) not to diſappoint entirely the expectation and good opinion you had conceived of me. This then was the chief reaſon that induced me to labour in the publication of this work, at a time when almoſt every moment was precious, and the moſt difficult employments lay on my hands. Though, indeed, many things may be found here appertaining principally to medi-

cal

cal knowledge; however, there are not few that relate to Anatomy, and that part of the *Ars Medendi* with which it behoves and becomes a Surgeon to be acquainted. Therefore, *Gentlemen*, if, amidſt thoſe employments in which you are engaged for the public good, you have any leiſure to beſtow your attention on this trifling monument which gratitude dedicates to you; look upon it as a pledge of the ſenſe of thoſe obligations I am under, and let it not be deſtitute of your favour and patronage. Thus will it receive from you an additional authority, weight, and conſequence, and be a laſting monument of my gratitude, and your kindneſſes. And ſince the many

excellent

excellent ſervices you render the public, ſhew clearly your prudence, and readineſs to embrace every opportunity of doing good; (to witneſs, that ſumptuous and ſpacious burial yard which you encloſed on the outſide of the city walls; your regulations and inſtitutions in the late epidemic diſorder, concerning the rooms of the patients, the number of which you augmented;) this little work of mine will teſtify what attention you pay to literature, and the Medical Art in particular. And may God long preſerve lives that are of ſuch conſequence to the well-being of mankind, and grant you health to preſide over a Hoſpital which your prudence regulates ſo well! that, under that direction

which

which has conduced to its improvement, it may reach the ſummit of perfection.

NAPLES,
The Fourth of the Calends
of December, 1764.

THE PREFACE.

TO THE

ILLUSTRIOUS AND LEARNED

Gerard Van Swieten.

IF all thoſe who commence Students in rational Phyſic, would diligently endeavour to obtain a knowledge of the fabric of the human body, (a knowledge which cannot fail of being very ſerviceable, and inſtrumental towards the diſcrimination and cure of diſeaſes) and would not ſuffer themſelves to be led aſide by prejudices, or idleneſs, nor follow ſtudies that are remote, and tend in no ways to the

advancement of their art; amongſt ſuch a number of rational Phyſicians, we ſhould not be ſo often at a loſs for that right rule of practice which they boaſt of having obtained. But ſuch is the prevailing faſhion of the preſent times that moſt Phyſicians give into ſpecious purſuits, and ſtudies favouring of various hypotheſes, and very few apply at all to the ſtudy of the human frame: and what is more ſhameful, very able profeſſors in the Faculty one while contemn Anatomy in general, and another while accuſe it of being vainly ſubtilized. Although I think theſe cenſures ought rather to be deſpiſed than confuted; yet, I alſo think it is the duty of an honeſt man to ſtand up as much as he can againſt their prevalency. For there is ſome reaſon to fear leſt ſuch noxious opinions, bandied about from mouth to mouth, ſhould gain ſome conſequence by not being oppoſed, and be inſtilled into the minds of youth, who are naturally averſe to ſtudy and labour; and thus poiſon, and

irreparably injure the growing hopes and genius of the nation. For this reaſon I always highly valued the writings of thoſe famous men, who have ſet forth the great advantages that may be reaped from Anatomical Studies, and the neceſſity of them, towards obtaining a right method of practice in Phyſic. I wiſh the example of ſuch had been oftener followed, and ſuch arguments produced as were not far-fetched, nor difficult to be underſtood, but rather obvious, and drawn from thoſe methods of cure with which daily experience preſents us. For ſuch examples, when brought before our eyes, have great power in perſuading, and leave a ſtrong impreſſion on our minds in the conviction.

It happens, therefore, very opportunely, that Anatomy preſents me with a method of curing that frequent and obſtinate diſorder, the *Nervous Sciatica*; an inſtance very proper to exemplify how this ſcience points out to us a ſucceſsful method of curing

curing the moſt obſtinate, and even ſuch as have been deemed incurable diſeaſes. Upon which account, as I ardently wiſhed for an opportunity to relax a little from my attendance at the ſick rooms of the Hoſpital, I was willing to addreſs myſelf to you, learned Sir, in this ſhort commentary, which will not take up much of your time to read; that, whilſt I am encouraging young men, by no trifling examples, to purſue the ſtudy of Anatomy, and promiſing them that no ſmall advantages may be reaped from it in the practice of Phyſic, they ſhould look up to you as a Medical Luminary, in which they may ſee a notable example of that moſt conſummate knowledge in art, accumulated chiefly from a perfect acquaintance with the conſtitution of the human frame.

ON THE NERVOUS SCIATICA.

1. IT is a thing very well known amongſt Phyſicians, that the name *Sciatica* is given to that ſpecies of pain which ſeizes the hips about thoſe parts where the thigh-bones form the joints; a pain ſeldom felt in both, but often in one, ſo as to render the patient lame on that ſide which it inveſts. This name is of a Greek origin, and is derived from the ſeat of the diſorder; for the hip in Greek is called ἰσχιον; but I much doubt whether it was adopted by the Latins before the time of *Pliny* the elder*. For altho'

* Hiſt. Natural. lib. 27, cap. 1.

*Cato** has the word *Iſchiacos*, yet *Celſus*, who was very accurate in his knowledge of the Latin names, which were affixed in his time to diſeaſes, when he has occaſion to mention this pain, chuſes to call it *Dolor Coxæ*†.

2. The ſpecies of the Sciatica are various, according to the various parts in which the pain is felt; and altho', as hitherto, phyſicians have not diſcriminated between them ſo accurately as they ought; yet every one is ſeparately to be diſtinguiſhed and marked out by its characteriſtic ſymptoms, as each demands its proper treatment in the cure. The principal ſpecies of Sciatica that deſerve our attention are two; one, where the pain is fixed in the hip, and extends no further; the other, where it runs along, as it were, in a track, and is propagated even down

* De Re Ruſtica, cap. 123.

† De Re Medica, lib. 2, cap. 8; lib. 4, cap. 22.

the

the foot, on the ſame ſide. Although, in the *former*, it is not only one part of the hip that is always affected, nor the pain produced always by the ſame cauſe; yet becauſe it is generally felt about the joint, I think it would be properly termed the *arthritic Sciatica*. The *latter*, becauſe it has its ſituation in the nerves which run along the hip, (notwithſtanding it is by ſome called the *true*, as by *Proſperus Martianus**, and by others the *baſtard Sciatica*, as by *Riolanus*†) I am of opinion ought to be called the *Nervous Sciatica*.

3. At preſent, I ſhall leave the *Arthritic Sciatica* out of the queſtion. For I know very well that many very eminent men who have gone before me, have left nothing for me to ſay, either on its various cauſes, or various ſituations; to witneſs, thoſe very excellent phyſicians *Mor-*

* In Hippocratis Librum de affect. Sect. 2, ver. 25, pm. 166.

† Enchirid. Anat. lib. 5, cap. 3.

*gagni**, and *Antony de Haen*†. I ſhall take upon me to ſpeak only of the *Nervous Sciatica*, the principal cauſes of which lie as yet buried in obſcurity. But I ſhall divide this Sciatica into two ſpecies. The one is a fixed pain in the hip, ſituated chiefly behind the great trochanter of the thigh, and extends itſelf upwards to the Os ſacrum, and downwards by the exterior ſide of the thigh even to the knee: this pain ſeldom ſtops at the knee, but often runs on the exterior part of the head of the *Fibula*, and deſcends to the fore part of the leg, where it purſues its courſe along the outſide of the anterior ſpine of the Tibia, before the exterior ancle, and ſo ends on the Dorſum Pedis. The other is a fixed pain in the groin, which runs along the inſide of the thigh and leg. The *former*, as it is ſituated in the poſterior part of the hip,

* De Sedib. & cauſis Morb. per Anat. indigetis lib. 4, ep. 47.

† Rationis Medendi, lib. 4, cap. 4.

and

and ariſes from an affection of the *Iſchiadic Nerve*, I ſhall call the *Poſterior Nervous Sciatica:* the latter, which inveſts the fore part of the hip, and is propagated along the *Crural Nerve*, I ſhall term the *Anterior Nervous Sciatica*. I ſhall now, as briefly as I can, relate what diſcoveries and obſervations I have made, and what judgment I have formed on theſe two ſpecies of the diſeaſe.

4. To begin with the *Poſterior Sciatica Nervoſa*. I have obſerved that it is either *continual* or *intermitting:* ſometimes it tortures the patient day and night, without any intermiſſion; but more commonly remits now and then, and returns again at ſtated intervals. But it is common to both, to have the pains exacerbated in the evening; and the *intermitting Sciatica* generally begins its attacks at that time. In the attacks, the convulſion of the part is ſo great, that the patient is tortured with a ſenſation like the cramp, leaps out

of bed, as the warmth there encreaſes it, and flies to the open air for relief. In the beginning, this Sciatica is almoſt always continual, and intermits by degrees, as if it was tired. This intermitting, however, is oftentimes by far the moſt excruciating torture, and ſeems to pauſe from one attack, to collect and increaſe all its ſtrength for the next. But as I have known many perſons, who, from ſuffering a continual, have been attacked by an intermitting, I never once ſaw the reverſe, or obſerved the continual preceded by the intermitting Sciatica; for then the diſeaſe would abate inſtead of encreaſing, and the firſt attack be the moſt violent. However this may be; if the diſorder remains a long time uncured, a *Semiparalyſis* of the affected part will be the conſequence, which is always accompanied with a great emaciation, and an inſuperable lameneſs. From all the examples I can collect, I never ſaw a perfect palſy produced by this Sciatica.

5. As

5. As I obſerved all the ſymptoms accurately, I concluded the judgment I had formed was right; and that it conſiſted in an affection of the Iſchiadic Nerve. Though chance has never thrown an opportunity in my way to prove this by the diſſection of any perſon who died in this diſorder, I do not in the leaſt imagine that I am aſſuming a dubious ſtate of the caſe, in pointing out its ſeat. For in this particular I am very well ſatisfied, both by my own diligent obſervations of the ſymptoms, as well as by the happy and abſolute cures I have performed in conſequence of them. If I am here deceived, I am happily deceived, and I am not very ſollicitous to be delivered from the infatuation, ſince in it I have ſuch ſucceſs with my patients. By the by, I think the phyſician, who after having diligently examined into the ſituation, and effects of the diſorder, ſhould deny that affection of the Iſchiadic Nerves, could underſtand but little of the fabric of the human

body. For as to what relates to the ſeat of the diſorder, this is ſo clear, that if the patient will but point out with his finger the track of the pain from the *Os ſacrum* to the foot, we ſhall find him, like a ſkilful anatomiſt, tracing out the exact progreſs of the Iſchiadic Nerve. That Hippocrates, from the track of the pain, calls it an affection of the crural vein, is excuſeable, by reaſon of the ignorance of thoſe times reſpecting the nerves: and that *Martianus*, after thoſe learned men, *Joannes Riolanus* and *Fernelius**, had profeſſed the truth, followed this opinion of Hippocrates, muſt be attributed to his ignorance of the circulation of the blood. For as he obſerved, in † a certain maſon who was his patient in this diſorder, that in the exacerbation of the pain, which happened in the paroxyſms, all the veins that branched along the outſide of the affected hip and leg ſwelled and puffed up

* Enchirid. Anat. lib. 5.

† Pathol. lib. 6, cap. 18.

won-

wonderfully, and immediately upon the pain ſubſiding, totally diſappeared, he concluded, that this manifeſtly proved the deſcent of the morbific matter by the veins of the leg. If he had known that it was impoſſible for the veins to be the conductors of the matter, and that the muſcles of the affected part were ſo convulſed as to puff out the external lax veins by the conſtrained oppoſite courſe of the blood, he might have indeed been taught that this phænomenon could not in any ſhape prove this opinion of Hippocrates.

6. Not only the ſituation and track of the pain demonſtrate that the ſeat of the diſorder is in the Iſchiadic Nerve, but likewiſe the various affections which follow prove it clearly. For the inſuperable lameneſs that is ſometimes the conſequence of it, ſhews, that the powers of the muſcles in moving the thigh and leg are weakened: but the power of thoſe muſcles

muſcles that maintain the free motion of the nerves, are not commonly weakened for a long time. For a Semi-palſy coming on, gives us a ſtriking proof that the nerves are affected. It is uſually accompanied with an emaciation, which diſtinguiſhes the torpor of the limbs ariſing from long inactivity, from that impotence which is brought on by wounding the nerves. Therefore, if the nerves of the hip in this Sciatica are affected, I do not ſee how it can be doubted that the Iſchiadic, of all the nerves traverſing the hips, as the pain is fixed there, is not the cauſe and ſeat of the diſorder. In this nerve the pain is felt, in this nerve we are to ſearch for the cauſe of lameneſs, and from its affection the origin of the *Semiparalyſis* and *Tabes*.

7. But I would by no means have this Tabes, of which I am now ſpeaking, confounded with the *Iſchiadic Tabes*, which *Hippocrates* mentions in his book *De*

Glandulis. For this is a conſumption of the whole body, which happens after the corroding humour has flowed into the joint of the hip, and conſiderably ulcerated it. For the hectic fever ariſing from that exulceration, brings on a fatal conſumption on the whole body. But the *Tabes* that follows the *Poſterior Nervous Sciatica*, comprehends only thoſe parts that are ſeized by the pain: as it is neither attended with a fever, nor affects the other parts of the body, but may be borne without being fatal. And at this particular time, I have a man of ſeventy under my care, who, from having ſuffered the Poſterior Nervous Sciatica a long time, has had his left leg emaciated for near thirty years; but is in other reſpects very healthy. He has ſtill ſuch a power of motion remaining in that leg, that he can walk tolerably well by the help of a ſtick. I imagine he owes this advantage, chiefly, to his having at that time a flux from the piles, from which, every third month, although he is

of

of that advanced age, a great quantity of blood is diſcharged. The Iſchiadic Tabes mentioned by *Hippocrates* is ulcerous, total, and fatal: and ariſes from the Arthritic Sciatica: but the Paralytic, which is the conſequence of the Nervous Sciatica, is partial, and of long continuance, without attacking life. To diſtinguiſh this Tabes from that which *Hippocrates* mentions, I ſhall call it the *Iſchiadic Atrophy*.

8. If therefore the ſeat of this Poſterior Nervous Sciatica is in the Iſchiadic Nerve, it remains to enquire, what cauſe begets this affection of the nerve, and what part of the nerve it inveſts, and whence derived. For it ſeems to be an acrid and irritating matter, which lying on the nerve, preys on the ſtamina, and gives riſe to the pain. Nor can it be doubted that this matter occupies the cavities of the nervous Stamina, as they are full of a humour which they receive from the brain, and which cannot be acrid when the fountain

tain is uncorrupt. Therefore it ſeems to paſs between the nervous Stamina, and to be contained in the cellular Vaginæ that encloſe them. From whence this matter is derived, ſeems no eaſy queſtion to be reſolved. For from what fountain can this humour flow into the Vaginæ of the nerves, when it appears that the acrid matter of the Sciatica can join itſelf with it? For this purpoſe there are ſuppoſed to be two fountains; for from the hollow of the ſpine, from whence the Iſchiadic Nerves branch out, it is ſuppoſed to be poſſible for ſome humour to flow into their Vaginæ; and indeed it appears that no ſmall quantity of vapours may be accumulated from thoſe very ſmall arteries which pervade theſe very Vaginæ. It will therefore be better if we examine, a little more accurately than has been hitherto done, theſe fountains, from which the humour ariſes that flows through the Vaginæ of the Iſchiadic Nerves; that we may determine upon ſome ſure grounds, whether

ther that acrid matter which cauſes the pain can poſſibly deſcend to the Iſchiadic Nerve.

9. At firſt, therefore, it is neceſſary to premiſe, that the hollow of the ſpine, which, from the great *Foramen* of the *Occiput*, reaches to the extremity of the *Os ſacrum*, through which the ſpinal marrow deſcends, is larger in men than in other animals; for it is ſo large, that it not only affords a convenient paſſage for the marrow, as it does in other animals; but although the marrow, in proportion to the brain, which is larger in men, is alſo fuller than in other animals; the capacity of the ſpine far exceeds the ſize of the marrow; ſo that around the marrow deſcending in the ſpine, there is a conſiderable ſpace remains. This ſpace is not entirely void of matter; for through it deſcends the Dura Mater, which being formed into a tube, from the great *Foramen* of the *Occiput*, incloſes the ſpinal marrow

marrow like a ſheath. This tube of the Dura Mater is not ſo large as to touch the ſurrounding encloſure of the ſpine on all ſides, nor ſo narrow as to embrace the included marrow cloſely: but it is ſomewhat diſtant from the hollow of the ſpine, chiefly backwards towards the ſeat of the ſpinal *Apophyſes*, and is ſeparated from the *Ambitus* of the encloſed marrow by a conſiderable ſpace. Theſe two ſpaces, when a man is in health, are not empty, but each is filled with a matter peculiar to itſelf; for all that ſpace, which is between the Dura Mater and the encloſure of the hollow of the ſpine, is always filled with a cellular kind of ſubſtance, replete with a ſoft and fluid kind of fat; in the room of this, in conſumptive perſons there is a mucid *vapour*, and a true mucus in dropſical perſons, and in fœtuſes ſuffocated in difficult labours, a ſanguineous *vapour*. But, alſo, all that ſpace which is between the Vagina of the Dura Mater, and the ſpinal marrow, is always found to be filled, not

as

as ſome eminent men imagine (becauſe the fact is as yet immerſed in obſcurity) by the marrow itſelf, which is more full in living, than in dead ſubjects, nor by a thick vapour; but with water, like that which the Pericardium contains about the heart; or ſuch as fills the hollows of the ventricles of the brain, the labyrinth of the ear, or other cavities of the body, which are impervious to the air.

10. This water, which fills the tube of the Dura Mater even to the *Os ſacrum*, does not entirely encloſe the ſpinal marrow, but even abounds in the cavity of the ſkull, and fills all the ſpaces which are between the brain and the *ambitus* of the Dura Mater*. Some of theſe ſpaces are always to be met with about the baſis of the brain; and it is not uncommon to find a conſiderable ſpace between the *ambitus* itſelf of the brain, and the ſur-

* Conf. Sternutament Phyſiologiam, fig. 1, 57, 62, 137.

rounding

rounding Dura Mater. This is principally to be found in conſumptive perſons, and old men. In ſuch the brain is found to be conſiderably wrinkled up, or contracted; and that which the ſkull, naturally, can hardly contain, is hardened by old age, or the power of the conſumption, and gradually diminiſhed in its ſize. But here, as much as the brain diminiſhes in its ſize, ſo far is it withdrawn from contact with the Dura Mater, and whatever ſpace is left between, is all filled up with a watery vapour; therefore, in the diſſection of old men, and conſumptive perſons, if we carefully open the *Fornix* of the ſkull, and ſtir the ſound Dura Mater in any part, we ſhall find a watery ſtream immediately burſt forth, and when this is exhauſted, ſee the whole fall relaxed upon the brain, and wrinkle up. This does not only hold true, in regard to the brain, but alſo to the ſpinal marrow, which in the ſame ſubjects is ſmaller, and leaves a larger ſpace between itſelf and the Dura Mater, which the water occu-

pies; ſo that it ſeems we may lay it down as a certain truth, that the ſpace which is filled with water around the ſpinal marrow in men, encreaſes by age; for this ſpace, which is not to be found in a fœtus, where the marrow is embraced by the tube of the *Dura*, eſpecially in the neck, increaſes by age, and grows conſiderably large.

11. The reaſon that anatomiſts have never yet obſerved this collection of water about the brain, and in the ſpine, is owing to the common prepoſterous method of diſſecting; for, when they are about to examine the brain, they commonly cut off the head from the neck; by this means the tube of the Dura Mater, which deſcends by the ſpine of the neck, being cut through, all the water that is collected about the brain, and the ſpinal marrow, flows out, and is fooliſhly loſt; ſo that, when the ſkull is opened, all the ſpaces between the brain and the Dura Mater, which were before

filled

filled with water, are now found empty, and deceive the anatomiſt with the appearance of empty cavities, which, perhaps, ſome diſſipable vapour filled. Here then, nothing ſcarce at all is to be found, either in the cavities at the baſe of the ſkull, or in the chief vaginal ſinus's of the Dura Mater*, to prove that they were occupied before by ſome fluid. So that, by this irrational method of diſſecting, all the fluid collected around the marrow and brain being loſt, air enters in, and ſupplies its place. This is the reaſon, that, in examining the brain, we find a number of little bubbles of air, under the *Membrana Arachnoides*, on the top of the *Sulci* or furrows of the brain. The number, indeed, is greater, or leſs, in different ſubjects, according to the greater or leſs diſtance or partition of the *Pia*, and *Arachnoides* membrane. To theſe partitions there is an open paſſage, where the *Arachnoides*, in its deſcent to the

* Conf. de Aquæduc. auris humanæ internæ, 75, 76.

ſpine, make its greateſt receſſion from a contact with the Pia Mater: through this paſſage, on cutting off the head, as the fluid of the *Sulci* of the brain flows out, the air ruſhes in and occupies its room. Therefore, in thoſe heads which I have carefully opened, without ſeparating them from the trunk, I never found theſe little bubbles of air under the *Arachnoides*.

12. As, therefore, ſuch a collected fluid may be plainly obſerved about the brain, and ſpinal marrow, we muſt carefully make the following experiments. Let the head of the undivided body be put into an erect poſition; the integuments being diſſected, and the bones bared, proceed to ſeparate the bony *Fornix* of the ſkull, by an horizontal ſection. But in beginning thus, great care muſt be taken in cutting the bone, or ſeparating it, not to perforate the adjoining Dura Mater. If this rule is obſerved; when the bone is taken off, if it be the body of an old man,

man, or conſumptive perſon, we ſhall find, wherever it is pricked, that water will flow out: if not, it will appear to be exactly filled with the brain. But after this, let the Dura Mater be diſſected, and the brain bared, and then it will plainly appear under the *Arachnoides*; where not the ſmalleſt bubble muſt make its appearance. After this, lift up gently the anterior lobes of the brain, and you will ſee each of the cribroſe cells of the Ethmoides abounding with water: and, upon raiſing the reſt of the brain, you will find, at the conjunction of the optic nerves, and the ſides of the oval protuberance, all thoſe parts, that in decollated bodies are found empty, full of water. This water may fill the vaginal Sinus of the fifth pair, and the whole auditory Meatus. All that ſpace that is around the trunk of the *Medulla oblongata* is filled with water; and if, after the trunk is cut through, the *Cerebrum* and *Cerebellum* be taken away, and the body put in an erect poſition, the tube of the Dura

Mater will be found to be exactly full of this water all around the ſpinal marrow. After this, if you cut through any of the Vertebræ of the loins, and the lower part of the tube of the Dura Mater, where it embraces the *Cauda equina*, you will find a limpid ſtream flow out, and the water that was before obſerved around the ſpinal marrow will gradually deſcend, till it is all emptied by the aperture at the bottom. If you open the Vertebræ of the loins before the head is touched, and cut the encloſed tube of the Dura Mater, a great quantity of water will burſt out, and after all this ſpontaneous flux of water is ſpent, if you lift up the head, and ſhake it towards the aperture, a more plentiful ſtream will burſt out, as if a new fountain was unlocked. In theſe experiments, which I made on the bodies of near twenty adults, and which I repeated at different times, I could draw off freely from the hollow of the ſpine, four, and even ſometimes five ounces of water: I commonly found it very clear in ſuch ſub-

jects,

jects, although it ſometimes inclined a little to a yellow colour; but in fœtus's ſtrangled in difficult labour, little as it was, I obſerved it to be always red, and opake.

13. It may not be abſurd, indeed, to entertain ſome doubt whether this quantity of water about the brain, and the ſpinal marrow, is not in conſequence of a man's death; and whether a man, when living, has not theſe ſpaces empty, or filled with a kind of vapour, or more turgid marrow. But I think we have not much reaſon to imagine there are void ſpaces in living, when theſe ſpaces are found full in dead ſubjects; for the law of nature tells us the contrary, — *Nuſpiam vacuum in animantium eſſe corpore, in quo quicquid libere exterior aër ſolidumve non replet, impleat humor*;—and that there can be no void ſpace in the bodies of living animals, for if a ſpace is not occupied by ſome ſolid ſubſtance, or is impervious to the air, it muſt be filled with ſome fluid.

Neither, if we ſuppoſe a vapour to occupy theſe ſpaces in living, can it ſeem very probable, that it ſhould be ſo condenſed in dead men, as to fill them entirely with water. But beſides, the diſſection of ſome living animals confirms me in my opinion, that this water which we doubt of, is alſo to be found in a living man; for in thoſe fiſhes which I have diſſected when alive, or immediately after death, (and eſpecially in the ſea-tortoiſe of about fifteen pounds weight) I have found the brain to be very ſmall, in proportion to the ſkull, and a conſiderable ſpace remaining on the inſide between them; and it appeared that all this ſpace was filled with water all around the Medulla Spinalis, which took up the other part of ſpace remaining. But I did not find it to be the ſame in living dogs, or flying fowls, as the brain and ſpinal marrow here were ſo large, whether the ſubjects were alive or dead, that the cavity in which they were contained, was entirely filled up. But though theſe animals were not ſo proper

per to prove the exiſtence of the fluid, yet they exhibit a clear proof that the brain and ſpinal marrow are not diminiſhed in their ſize by death. Although there are ſome who imagine that the ſpinal marrow is larger in life, and that it is ſufficient of itſelf to fill up all the ſurrounding ſpace: they ought, however, to take notice, that the branches of the nerves, proceeding from the ſpinal marrow, which in a dead body run along that ſpace unfolded, would, by their ſuppoſition, be entangled, and compreſſed in a living ſubject. All that ſpace, therefore, which is around the ſpinal marrow, is filled with water naturally, and in this reſpect, a dead body varies little, or nothing from a living one.

14. But it ſeems a wonder that many famous men, who have diligently examined the fluids of the cavities of the human body, ſhould paſs over in ſilence, or have taken no notice of this large and capital cavity

cavity of the ſpine, which abounds ſo plentifully with a fluid. It ſeems beyond a doubt, that this fluid of the ſpine, as well as every other that moiſtens the reſt of the cavities of the human body, oozes out from the extremities of the ſmall arteries, and is again reſorbed by the ſmall inhaling veins, ſo as to be in a continual ſtate of renovation: I myſelf can entertain no doubt of this, as I have before proved experimentally * that ſome of the inhaling mouths of the ſmall veins of the *Dura Mater* opened upon the internal ſurface; of the truth of which *Abraham Kaavius*, the grandſon of the illuſtrious *Boerhaave*, formerly doubted †. But I have no doubt ‡ that the great Phyſician *Haller*'s opinion is founded on fact; that thoſe waters, which the ventricle of the *Cerebellum* received, either from the greater ventricles of the brain, by the Lacunæ, or *Sylvius*'s aque-

* Aquæd. auris, &c. 96.

† Perſp. Diet. Hip. 173.

‡ Elem. Phyſ. 778.

duct,

duct, or the proper exhaling arteries, were afterwards mixed with thoſe of the ſpine; as here, their perpendicular poſition, and the free paſſage that is about the cavity of the ſpine, ſufficiently prove to us that there is a defluxion of humours to the ſpine.

15. Neither does that coagulating quality, which is commonly attributed to the waters of the ventricles, and which, by my experiments, is not true, reſpecting that of the ſpine; contradict the mixture of the water of the brain, with that which is about the ſpinal marrow; for if experiments were properly made, the coagulating quality would be found to be the ſame both in the water of the brain and ſpine. But the water of the ſpine, when put over a fire, does not concrete; for in placing over the fire two, three, or four ounces of this fluid, which I had taken from dead bodies (and this at ſeven different trials, as I find in my common-place book) it always boiled and frothed up,

up, with a ſmell very like that of hot fleſh broth, but by degrees evaporated, and vaniſhed, without the leaſt ſigns of a coagulum. In the ſame manner the little quantity of water I have taken from the greater ventricles of the brain, exhibited the ſame appearance *. *Bellini* tried the ſame experiment with the ſame ſucceſs; he obſerved that the water of the brain ſoon grew hot, and entirely evaporated, ſo as not to leave the leaſt remains on the veſſel in which it was contained. *Brunner* † alſo confirmed this by ſome experiments which he made; for, *in evaporating it, he ſaw it covered over with a kind of film,* not *a white concretion, as is generally found in water. Boerhaave* ‡, as well as the famous *Antony de Haen,* lately made ſome experiments ſimilar to theſe ‖.

* De Motu cordis, 12.

† De glandula pituit.

‡ Prælect. ad Inſtit. med. 274.

‖ Rationis medendi, parte 4, cap. 5, p. 216, Vindob. 1760.

16. I

16. I do not ſee how ſome eminent phyſicians, in ſo clear a caſe as this, can prefer ſome few experiments, that have not been ſufficiently repeated, nor ſufficiently underſtood, concerning the fluid of the ventricles of the brain being coagulable, to the aſſertions of ſuch famous men, and the experiments I have made; relying on this principle, *That as by ſome experiments we are told a fluid will coagulate, and by others that it can be evaporated; we ought rather to give credit to the former, as delay and putrefaction may render a fluid evaporable, but no chance render it coagulable.* For humours, when in a ſtate of putrefaction, are ſtinking and turbid, and never limpid and inodorous: but I always choſe ſuch fluids, of the ventricles of the brain, with which I made experiments, as were tranſparent and inodorous. Nor is it, indeed, true, that an animal fluid may loſe that coagulable nature which it poſſeſſed, nor true that it can never acquire it; for, on the contrary, in the bodies of animals, a fluid which

which has not a coagulable nature, may eaſily acquire one, but not eaſily loſe it when acquired. If no fluid loſes that quality, but in a ſtate of putrefaction, which cannot be effected eaſily, nor happen when it is tranſparent and inodorous; it may yet acquire a coagulable nature by the ſlighteſt cauſe, and preſerve its tranſparency: ſo that, if ſome experiments prove the coagulable nature of any tranſparent fluid, ſecreted from the blood, and others entirely diſprove it, we ſhould rather believe that the latter ſhews beſt the natural ſtate of the fluid*. For the fluid

* Becauſe the fluids of the ventricles, with which Cotunnius made his experiments, cannot be ſuppoſed to have acquired an evaporable quality, for the ſeveral reaſons he has urged, in its being inodorous and tranſparent. Beſides, as he has alſo proved that the fluids of the human body may be rendered coagulable by the moſt trifling cauſes, this delay, which may with the ſame ſhew of reaſon be attributed to the one as the other, as well as the putrefaction its conſequence, can be retorted as arguments againſt the coaguliſts; and the fluid evaporable in its natural ſtate, from being expoſed to the air, and various other cauſes, can be ſuppoſed to have been rendered coagulable.

may eaſily become coagulable without being ſo naturally, or loſing its tranſparency, or being inodorous; but it moſt undoubtedly cannot loſe its coagulability, without loſing both theſe properties. This may be proved experimentally, for I have often obſerved that all watery fluids, which flow from the blood into the cavities of the bodies of animals, and are not naturally coagulable, have acquired that quality without growing turbid. If I had a mind to demonſtrate this in a particular manner by examples, I ſee I ſhould be obliged to undertake, very unwillingly, two things: firſt, to bring ſuch experiments upon the carpet as I had deſigned more opportunely for another work; ſecondly, as the nature of the experiments will throw the neceſſity on me; to diſſent, in ſome meaſure, from the opinions of ſome learned men, whoſe maxims I would rather chuſe, if poſſible, to follow and adopt. But that I may not ſeem to detract from the truth, I ſhall juſt touch on this ſubject. I, therefore, will ſhew

that

that all the fluids ſecreted from the blood in a human body, which are naturally not coagulable, are commonly rendered ſo by various cauſes, without being made turbid. I will begin with the urine, which is ſuppoſed in general not to be coagulable, and yet, in ſome experiments, which I ſhall mention by and by, I have obſerved it acquire a coagulum.

17. There was a ſoldier of about eight-and-twenty years of age, who, for a great part of the ſummer, was ſtationed at the ſwamps of Bajæ. About the end of Auguſt he was ſeized with a quotidian intermittent fever, and on the fifth day he had a wonderful eruption of intercutaneous water. About the beginning of September he was ſent to the hoſpital of incurables, and put under my care. At this time, beſides an enormous watery tumor over his whole body, he laboured under a quotidian fever: the dropſy, under the attacks of the fever, ſeemed to encreaſe every day. He was coſtive, ſomewhat thirſty,

thirſty, his tongue was covered with a whitiſh mucus, he had the greateſt depreſſion of ſpirits, and his urine was very little; ſo that I thought it beſt to attempt firſt to baffle the fever, as a thing that cauſed and encreaſed the dropſy, and then to attack the dropſy itſelf. The firſt day, therefore, I gave him a drachm of the roots of ipecacuanha, to excuſs and throw off the *Fomes* of the fever, which lurked in the *Primæ Viæ:* this cauſed him to vomit ſome mucous matter mixed with bile, and gave him two ſtools. The following days I gave him ſome doſes of the bark, with rhubarb; ſo that, by being kept open, the fever decamped; but the dropſy ſtill remained. Upon giving him, at firſt, a drachm of the pills of ſquills every day, and making him drink a decoction of ſaſſafras for a diuretic, the cure ſeemed to be very forward. But after ſome days his pulſe ſeemed conſtantly to grow quicker, his ſtools ſomewhat more frequent; but his urine was very little, and his hydropic tumor ſpontaneouſly encreaſed.

I then was inclined to believe, that, this prodigious dropſy, which the violence of the fever firſt raiſed, was rather encreaſed by thoſe ſharp ſtrengthening diuretics, and the fever brought on again. The opinion that I had formed, I have ſince found ſupported by many ſimilar caſes, as well as in the piles; as I was not ſucceſsful in ſome other attempts to cure this dropſy: all which I may, perhaps, explain in good time. Now, therefore, I reſolved to try what *Cream of Tartar* would do, as I had often found before that it provoked urine without any great acceleration of the pulſe. I began to give him the quantity of half an ounce in the morning, every day, diſſolved in a conſiderable quantity of the decoction of Germander. The quantity was ſo encreaſed by this remedy, that the patient voided every night ten or twelve pints of high-coloured urine. But as the patient himſelf confeſſed what he drank was much leſs in quantity, it is beyond a doubt that this prodigious quantity of urine

urine was drawn off, in a great meaſure, from thoſe waters which cauſed the dropſy. Although the decreaſing tumour manifeſted this plainly, I yet thought proper, by placing the urine over a fire, to prove it experimentally; for, as I knew that the intercutaneous water, which I had obſerved in the bodies of ſuch as died of the dropſy, contained a coagulable matter, I was induced to hope, that, if the patient had voided any ſuch water by urine, the coagulable matter, which abounded there, would be ſhewn by the fire. This was proved, experimentally, to be as I imagined; for, on placing two pints of the urine over the fire, when one half was evaporated, the other formed itſelf into a white maſs, like the ſoft white of an egg when boiled. This experiment was repeated until the flux of urine ſtopped; and my pupils, who were preſent at the firſt experiment, proved the ſame thing by repeated experiments. Nor have I found this matter, which coagulates at the fire, in the encreaſed urine of drop-

ſical perſons alone; but (though not in ſo conſiderable a degree) even in the urine of ſuch as have been troubled with a Diabetes. It is therefore, in the firſt place, evident, that urine, which is never coagulable in healthy people, in particular caſes may be proved to be ſo experimentally.

18. Now, I have not only obſerved the urine, which is not naturally coagulable, to be ſo, but that all the fluids (not naturally coagulable neither) which are contained in the cavities of the human body, have acquired that quality by the power of ſome diſorder. In aſſerting this, I ſee, very well, I ſhall draw all thoſe on my back, who aſſert that the fluid of the cavities are naturally coagulable. But I would entreat all ſuch, by the love they bear truth, to ſuſpend their judgments a-while, until I lay before them thoſe experiments I have made; and beg them to enquire carefully themſelves, again and again, into this ſubject; for I am pretty well

well assured, since they are very learned men, that they will, in a short time, hold the same opinion that I do; That all the fluids contained in the various cavities of the body are not naturally coagulable; and if at any time they are so, that it happens *præter Naturam*. As I have already proved this, respecting the waters of the spine and brain, it remains to confirm it by the fluids of the Pericardium, the Breast, the Abdomen, and the Vagina of the Testes. The fluid of the Pericardium, if transparent and thin, (that is natural) when exposed to the fire entirely evaporated, and shewed no signs of a coagulum. This I proved by a number of experiments, not only with that which I took from the bodies of men, but even from living dogs. Nay, more, in a fœtus after nine months gestation, where one would not be led to suppose the secreted fluids were pure; when I have found near an ounce of a sanguineous fluid in the Pericardium, it all evaporated at the fire, excepting a little froth, like that which is seen on flesh

broth; which Craſſamentum ſeemed not to belong to the fluid, but to have been derived from the blood. But the fluid which I took from the Pericardium of a fœtus after ſix months geſtation, and which was very yellow, when expoſed to the fire, became gradually a maſs of mucus, rather than coagulum. However, that which I took from living dogs, diſſected for this purpoſe, always evaporated at the fire, without leaving the ſlighteſt remains behind. As I look upon thoſe experiments which I made from living animals to be of great conſequence, I would therefore lay ſome ſtreſs on them, towards clearing up this matter; as the fluid here was the genuine fluid of the Pericardium, without a defect, which might be ſuſpected not to be the caſe in a morbid dead body. I give no heed to what either *Lower**, or *Lanciſius*†, or *Kaavius*‡ ſay, where they ſeem to aſſert

* De corde 1, p. 69.

† De Motu cordis, cap. 5.

‡ Perſp. Diet. Hip. p. 316, 317.

that

that the fluid of the Pericardium is coagulable; for nature would teach me to diſregard the documents of the moſt learned men; as, without her teſtimony to corroborate them, all their aſſertions are futile and vain. If the authority of my experiments is not ſufficient here, and it is neceſſary to call in the teſtimony of others, I ſhall pitch on *Malpighi*; who, in making an experiment with the fluid of the Pericardium of an ox, obſerved it all evaporate by the gentle heat of a fire, and leave only a very thin cruſt behind; and found that four ounces of this fluid, placed in a pan over the fire, evaporated, without boiling, within the time of half an hour, and left a thin red cruſt behind, which, in ſmell, was like boiled fleſh*. I wonder how *Kaavius* could take theſe experiments of *Malpighi*'s, which were ſimilar to mine, pervert his words, and change them, without ceremony, to

* De Structuræ Glandularum cong. pag. 7, edit. Lond.

his own language, to corroborate the opinion of thoſe who aſſert the coagulability of the pericardial fluid: as if it was ſufficient to prove its coagulability, that he ſays, after it all evaporated, *tenuiſſimam in fundo vaſis, gracillemque cruſtam relinquat*; it left in the bottom of the veſſel a very thin and ſlender cruſt. Such a cruſt as this, is left by ſimple ſtagnated water when evaporated; much leſs then ſhall that fluid leave one, which is ſecreted from the blood, and which one would ſuppoſe the pureſt part of it, and of a diſtinct nature from water.

19. The fluid alſo of the breaſt, if it is little in quantity and pure, evaporates in the ſame manner at the fire, and ſhews, as the others, its watery nature. This was alſo the caſe with the fluid of the Abdomen, with which we had opportunities of making experiments of tener, as it is more frequently to be met with, than the fluid of the breaſt. However, I always entertained ſome doubts concerning the abdominal

abdominal fluid, whether its not being coagulable was owing to its being a natural fluid, and conſequently averſe to a coagulum; or to the putrid exhalation of the inteſtinal fæces of the body, with which, if we may judge by its fœtid ſmell, and milky muddy appearance, it ſeems impregnated. But the fluid which I took from living dogs ſeemed to clear up this doubt; for, when expoſed to the fire, though it was freſh, tranſparent, and almoſt inodorous, and ſeemed to have no defect whatever, it totally vaniſhed, without leaving any thing behind. The fluid of the Vagina of the Teſtes did the ſame; however, here, an incautious perſon may eaſily make a miſtake; for, in the Vagina of the Teſtes are commonly contained ſome few drops, (if the fluid be natural) which entirely vaniſh at the fire; but when it is a little more in quantity, then as much almoſt as is found above the uſual quantity, ſo much forms a coagulum at the fire. And we find that this fluid, in the Hydrocele, almoſt all coagulates at the fire.

20. This

20. This fluid of the Vagina of the Teſtes is not the only one of the human body that exhibits a mixture of a coagulum, when it exceeds its natural quantity: but the fluid of the brain, the ſpine, the breaſt, the pericardium, abdomen, and all, when exceeding their uſual natural quantity, exhibit the ſame. This is ſo manifeſt, that, even in one and the ſame ſubject, the fluid I took from one ſide of the breaſt evaporated totally at the fire; but that which I took from the other, where it was above the uſual quantity, was full of a coagulum. This thick fluid not only ſhewed itſelf, by its quantity being inconſiſtent with the nature of its ſituation; but by its uncommon colour; for it was yellow, and very different from that pure watery decoloration, where there is no mixture of a coagulum. This coagulum mixes with the fluids, contrary to the common courſe of nature; therefore, wherever it is found, that fluid is morboſe. Thus, in ſuch as have an Hydrocephalos, the fluid of the brain and ſpine is contaminated;

nated; as the waters are alſo coagulable in the dropſy of the Breaſt, of the Pericardium, Abdomen, or Vagina Teſtium. So that we muſt enquire the reaſons why this fluid, which (in its natural ſtate, is little in quantity, and of a watery kind) moiſtens the cavities of the human body, is blended with a coagulum, whenever ſuperabundant, or of a yellow colour. Theſe things, however, cannot be made apparent, unleſs I explain the origin of thoſe fluids.

21. Fluids are the offspring of the blood. The blood itſelf, which is forced by the alternate ſtrokes of the heart, by the arteries, through the whole body, is a fluid conſiſting of three parts; for the one part is red, and is formed of innumerable minute *Anuli*, as * the famous *De Turre* has proved to me experimentally; the other of a yellow caſt, which con-

* Confer ejus Epiſtol. ad Nollatum. & neperius opuſc. quod inſcribitur, *Nuove oſſervatione intorno la ſtoria naturale*, l. iv. 66.

cretes

cretes at the fire; the laſt merely watery. The functions of the blood ſeem to require this variety of conſtituent parts; for the blood is deſigned to nouriſh all the parts of the body, and to keep them warm and flexible. The ſerum, which is coagulable, ſerves for nutrition; for it adheres naturally, like varniſh, to the ſolid parts of animals. But this varniſh of the blood is kept very fluid, for, otherwiſe, ſuch a glutinous ſubſtance could not pervade the narrow veſſels of the body, nor reach particular parts which ſtand in need of nutrition. This is performed partly by the heat, which thoſe more ſolid red *Anuli* create in their rapid motion along with it; and partly by the aqueous fluid, which is alſo blended with it; and, by inſinuating itſelf, leſſens the adheſion of the particles, and alſo helps to render all the ſolids more flexible and ſupple. Thus the conſtituent parts, mutually aſſiſting each other in their function, form that admirable animal fluid, which, at the extremities of the innumerable branches

branches of the arteries, is diſtributed with wonderful contrivance; for all the ſmall arteries ſpread out ſtill into ſmaller, each of which have a triple terminus: others paſs by a continued track into the ſanguiferous veins; theſe are larger: others open at their extremities in the interſtices of the cellular Laminæ; theſe are more narrow: others, which are the narroweſt, terminate with open extremities, either on the ſuperficies of the ſkin, or cavities of the body. Therefore the blood, when it has reached thoſe bounds of the arteries, paſſes entire, and, as it were, through the whole body, by the wider branches which lead to the veins; whilſt the ſero-aqueous part turns to the leſſer branches which end in the cellular ſpaces; and the aqueous part, which is the thinneſt of all, and calculated for ſuch ſtrait paſſages, penetrates alone through thoſe very ſmall ramifications which terminate on the ſuperficies. In this diviſion of parts, the blood ſcarcely loſes any thing, excepting a little of the aqueous fluid; for the ſanguiferous veins

take up the blood of the primary; and the inhalent lymphatics that of the ſecondary branches: but the fluid of the ramifications of the third order entirely evaporates: and this vapour, if the ſuperficies on which the ramifications terminate, be expoſed to the air, will appear to fly off and diſſipate like ſmoke: ſuch is the inſenſible perſpiration of the whole ſkin, the noſtrils, the fauces, the mouth, and the cavity of the lungs: but if the ſuperficies be within a cavity, it is there condenſed, by the confinement, into water: ſuch is the origin of the water of the ſpine, the ventricles of the brain, the breaſt, the pericardium, the abdomen, and the vagina teſtium. There is in all parts, therefore, whether external or internal, the ſame perſpirable matter, whoſe diſmiſſion from the blood is neceſſary, and ſerviceable for many purpoſes: but eſpecially, where the coagulable ſerum is prepared proper for nutrition, which is beyond the extremities of the ſmaller veſſels; for it is there proper that it ſhould

undergo

undergo a diminution of its aqueous part, as it becomes more glutinous, and fitter for adheſion; and the water, which is thrown off, either moiſtens, or ſoftens internally, and prevents the ſuperficies of the parts from growing together; or, in paſſing off externally, ſoftens the ſkin, and the paſſages of the air.

22. This origin of the vapour, which the human body emits, is according to the law of nature: if it is ſparing and thin, there is no coagulum to be found in it; which muſt be attributed to the extreme ſmallneſs of the veſſels through which it paſſes. For, if the ſecreting veſſels are larger than they naturally are, they will ſuffer the aqueous fluid to paſs off in greater quantities, and together with it the coagulable glutinous ſerum: as in reality they do paſs, when upon any violent exertion of the ſtrength, they are diſtended beyond their common ſize. Thus, upon any encreaſed motion of the heart and arteries, the whole ſkin breaks

out

out into a ſweat; the greateſt part of which is a coagulable ſerum: to inſtance as a proof, the tenacious ſtiff ſtain left on the ſhirt by the ſweat, as if it had been ſtained with iſinglaſs water. Upon the ſame principles alſo, the lungs, the noſe, fauces, and mouth, ſweat; the matter here is ſometimes condenſed by the cold, and cauſes catarrhs, and colds. And from the ſame cauſe, the internal parts ſweat; however, as they are defended from the cold, they preſerve the ſerum in a fluid ſtate, properly blended with this vapour. But this is the animal law; that the heart ſhould never force the veſſels to ſweat, but upon ſome violent exertion of the bodily machine. A veſſel therefore always ſweats, that is, throws forth a coagulable, and more groſs fluid than it does in the common courſe of nature, when it is diſtended by ſome unuſual power; which power is derived from the blood's being at that time more abundant, or more impetuous. So that veſſels ſweat through fullneſs, or inflammation; thus, we ſee the

lungs,

lungs, when inflamed, covered over with a cruſt like a pleuritic coat; and find the inflamed pericardium, together with the heart, ſurrounded on all ſides with a polypous cruſt; and know that the *Hydrocele* (where the fluid of the *Vagina Teſtium* is coagulable) is preceded by an inflammation. It is eaſy, therefore, to render the fluids, that are collected in the cavities of the body, coagulable, as to cauſe the internal perſpiring veſſels to ſweat; or to accelerate the motion of the heart, and dilate the veſſels, by the impetus of the blood. And, as this is always the caſe, when the fever is high, or violent exerciſe has been uſed, there is an eaſy reaſon to be given, why the fluids, which we find in ſuch animals as died in a fever, or ſuffocation, are impregnated with a coagulum: and the reaſon that enabled *Lower** to find, in ſome oxen which the butchers had over driven, the fluid of the pericardium concreted like glue. Therefore the

* De corde, cap. 1. p. m. 9.

fluids, that we find in ſuch as died in fevers, are not natural, no more than the fluids of animals after violent exerciſe. I would fain perſuade people to try, whether (as has been already ſhewn, 18, 19) the internal fluids are free from a coagulum or not; or to open ſome living brute animal, or examine the bodies of men who die ſuddenly. Therefore we may conclude, that the part of the blood, which is coagulable, and proper for nutrition, is never thrown out, when the body is in its healthy natural ſtate, by the perſpirable ducts: nature hoards it up, and does not loſe it. And whenever this condenſed *vapour* is coagulable, it is impure, and impregnated with internal ſweat, contrary to the common courſe of nature; for no vapour is pure, nor natural, when coagulable. It is very proper that the coagulable lymph ſhould not be thrown out with the vapour; for it would take from the nouriſhment of the body, and, what would be ſtill more prejudicial, would concrete, and encruſt over the ſuperficies

of

of the internal parts, and render them naturally rigid. Nor, is it owing to any other cauſe, that we have frequently obſerved thoſe morboſe ligaments round the lungs of the pleura, or the pericardium of the heart, after inflammations of thoſe parts. Therefore, I hope to be pardoned by thoſe learned men, who erroneouſly imagine the internal vapours to be naturally coagulable, and rank the coagulable ſerum with them; if I ſhould ſay, that I would have the coagulable ſerum expunged from the number of ſecreted humours.

23. Hitherto it has been proved, that all the vapours of the human body cannot naturally be coagulable, though they may, out of the common courſe of nature, be impregnated with a coagulum: as, on the other hand, there are no examples to prove that coagulable fluids, when unvitiated, have loſt that quality. From hence it is evident, that we ought to put greater faith in thoſe experiments

that demonſtrate a vapour not to be coagulable, which is agreeable to the order of nature, than to ſuch as tell us it is ſo (16). For the acquirement of a coagulum ariſes from ſome vitiation, and is eaſily effected without altering the tranſparency of the fluid: but to loſe it, is a very difficult thing, and never happens when there is no defect. That the fluid of the ſpine will not coagulate, cannot, by any means, be urged againſt the mixture of it with the vapour of the brain, which alſo cannot be coagulated (15).

24. It now remains that we make a diligent enquiry, whether the fluid, already deſcribed, penetrates the *Vaginæ* of the nerves, which ariſe from the ſpinal marrow; ſince, in the ſame manner that it encircles the marrow, it nouriſhes and bathes the nerves ariſing from it, which run through the whole body. I think it cannot be diſputed, that it is of ſome uſe to the nerves; for the ſame tube of the *Dura Mater* is a kind of an appendage,

and

and encloſes, like a funnel, or lax ſheath, every nerve proceeding from the ſpinal marrow; and this lax Vagina is continued with them, till the nerves, in their exit from the ſpine, form the *Ganglion* or knot. Therefore, as the cavities of all the Vaginæ, which encloſe the nerves of the ſpine, are a continuation of the tube of the Dura Mater, which embraces the ſpinal marrow, and are filled with the ſame fluid; it is evident that every nerve of the ſpine is nouriſhed by it, even to the Ganglion. The doubt to be cleared up is, whether it nouriſhes beyond the *Ganglion*; for the ſingle *Vagina* of the *Dura Mater*, which was open thus far, is bound tight about the *Ganglion*; but from thence it ſpreads into cellular Laminæ, which partly embrace the nerve on all ſides, and partly clothe even every nervous *Fila*. Therefore, there ſeemed to be no paſſage for the fluid beyond the *Ganglion*; however, I was willing to make an experiment, whether air or quick-ſilver would paſs; but I found both of

them did paſs; for, the air being driven through a tube, applied to the open orifice of the Vagina, beyond the *Ganglion*, overcame it, and all the *Vaginæ*, which clothed the nerve beyond the *Ganglion*, immediately ſwelled up. Quickſilver alſo, injected, and preſſed the ſame way, paſſed the ſtraits of the Ganglion, and penetrated into the cellular Vaginæ of the nerve. I made thoſe experiments, chiefly, on thoſe Vaginæ that conduct the nerves which ariſe to the Iſchiadic Trunk, beyond the ſpine. And though this paſſage for the quickſilver and air was not obtained without ſome preſſure; that preſſure was, however, very trifling, or certainly not ſo great as to ſhew ſuch an obſtacle, which the fluid itſelf, of the ſpine of a living man, might not overcome without preſſure. If we conſider the purity of the fluid, and its aqueous nature, which is more penetrating than air or quickſilver; and how much more lax the paſſages are in a living ſubject, and that the warmth renders the fluid

ſtill

ſtill more penetrating; theſe will be ſufficient proofs that we ought not to condemn the opinions of thoſe, who think that the nerves enjoy the benefit of the fluid of the ſpine, beyond the Ganglion.

25. If the nature of the fluid of the ſpine had been coagulable, and not evaporable, I could eaſily have agreed with thoſe learned men, who think that *Malpighi**, when he cut a ſmall nerve running through the tail of an ox, and preſſed out with his finger a glutinous humour like turpentine, preſſed out the fluid of the ſpine, which runs through the vaginæ of the nerves. But we muſt now ſearch for the origin of this fluid in ſome other place. *Heiſter*†, alſo, upon cutting a nerve, ſeems to have obſerved ſomething ſimilar to this diſcovery of *Malpighi*'s; for, on making an experiment on a dog, he wounded ſome nerve, I know not where; by this means the dog was

* Opera poſth. pag. m. 27, ed. Ven.
† De Rachitide.

violently tortured with convulſions. But about three months afterwards, on diſſecting the ſame dog, he found, in that part which he had wounded, a conſiderable glandulous kind of concretion; which he thought aroſe from the nervous fluids dropping from the puncture. Although *Heiſter* has omitted to give an account what nerve it was he wounded; and it may be ſuſpected to be a *tendon* inſtead of a nerve; yet, that I may not caſt the imputation of careleſsneſs on ſo ſkilful a man, and allow ſomething to the convulſions which followed, and commonly ariſe more from a wounded nerve than a wounded tendon; I cannot but think that this was a fooliſh ground to build a proof on, that there was a glutinous fluid in the nerves. But ſince the exiſtence of this humour in the nerves cannot be doubted, as I have obſerved it clearly in repeating Malpighi's experiment, we muſt therefore ſeek ſome other origin for it than the ſpine. *Malpighi* and *Heiſter* deduced it from the brain; ſo that they judged the

glutinous matter to be the natural fluid of the nervous Fiſtulæ. Both of them, as I think, are in the wrong; and, what is more ſtrange, Malpighi is not a right interpreter of his own obſervations; for, if he could not find that glutinous fluid, when he preſſed the ſame nerves where they take their firſt riſe from the ſpinal marrow, before they were encloſed with the Vagina of the Dura Mater (24), though he found it when they had their Vaginæ; he ought to have underſtood, that it was not ſo much owing to their ſoftneſs (which is certainly not ſo great at their origin, as to ſuffer the nerve to be lacerated when preſſed) as to a want of the Vaginæ, that he could not produce the glutinous fluid*. Beſides, on cutting the ſpinal marrow of a living dog, where the true nervous fluid deſcends from the brain, and paſſes to the nerves, I found a mere aqueous evaporable fluid drop from the part, and not a ſizy glutinous humour:

* Loco proxime citato.

mour: even *Boerhaave* has already obſerved this in his own experiments *. Reaſon, excluſive of theſe experiments, tells us, that the nature of the true nervous fluid, which deſcends from the brain to the nerves, is aqueous, and not coagulable: and I think, that thoſe ſingular experiments which the famous *Mollinellius* † tried, nine years ſince, on a dog, manifeſtly prove it. He drew from the cells of the nerves of the eighth pair, not a glutinous, but a thin white evaporable fluid. Therefore, ſince this humour, which is produced on preſſing the nerves, and which is capable of being concreted, cannot have its origin either from the hollow of the ſpine, or the brain; it remains, that we enquire then whence it is derived.

26. But we cannot make it appear ſo plainly whence it takes its origin, unleſs we begin, in the firſt place, with defining

* Prælec. ad Inſtit. § 274.

† Bononienſis Acad. Commen. Tom. 3, p. 82.

the true ſeat of the humour. And, indeed, this concreſcible matter does not ſeem to be contained in the nervous pipes, whoſe cavities no one can obſerve; but in the cellular Vaginæ which embrace the filaments of the nerves. I learnt this, in preſſing ſome nerves ſimilar to thoſe on which *Malpighi* made his experiments; for I then obſerved the humour, very plainly, paſſing between the nerve and the Vagina. *Malpighi*, perhaps, affirmed a little too haſtily, that it paſſed through the nervous pipes, rather than the Vaginæ; for, if he had ſtripped, as well as he could, thoſe *Fiſtulæ*, or pipes, of their Vaginæ, and preſſed them, he would have found that he would no more have been able to have ſqueezed out a glutinous matter from them, than from the nerves before they leave the ſpine. We may, therefore, ſafely enquire, whence the Vaginæ receive this humour; and ſince it is not derived either from the brain (25), or from the hollow of the ſpine (15); it muſt be concluded that they receive it from

from the arteries, which run through them all, and which void this concreſcible matter mixed with *vapour*, even into the Vaginæ of the nerves, as well as into the interſtices of the cellular membrane (21). The paſſage through which it finds its way, is plainly ſhewn by warm water; for, on injecting it into the crural artery, it plainly invades the Vaginæ of the nerves, as well as the cellular membrane of the leg. I imagine that whilſt an animal is living, and warm, the humour voided by the arteries is very fluid; but that after death it is condenſed by the cold, and becomes more glutinous. For, in reality, on preſſing the nerves of living animals, which are warm, we find an aqueous fluid, and not a glutinous one. Therefore we ſee it is demonſtrated, that there are two origins from whence the fluid of the nervous Vaginæ is derived, *viz.* the cavity of the ſkull, or the hollow of the ſpine, and the arteries of the Vaginæ themſelves: from one the Vaginæ receive a little fluid, merely aqueous; but from

from the other a larger quantity, which is apt to concrete. Now, ſince the cauſe of the pain of the *Poſterior Nervous Sciatica* reſides in this humour, which pervades the Vaginæ of the Iſchiadic Nerves (8); we will examine how it acts on them, and enquire how it cauſes the pain.

27. It may cauſe the pain, in the firſt place, by its quantity being greater than the Vaginæ can eaſily contain, and overfloating the encloſed nerve; ſecondly, by becoming acrid, ſo as to ſtimulate, and irritate the nerve. Both theſe ſeem to be proved, and pointed out by experiments. For, indeed, I myſelf have ſeen, the obſervation of *Hippocrates* *, and *Cælius* † *Aurelianus*, confirmed, That the Poſterior Nervous Sciatica has followed a ſuppreſſion of the menſtrual, or the cuſtomary

* Popularium, Liber 5, Num. 33, in Polym. uxore, p. 793.

† Morborum cron. Lib. 5, Cap. 1, p. 549, Edit. Ammani.

flux

flux of the piles, and a repreſſion of the milk, or lochia: here, it ſeems not to be ſo much owing to the depravity of the fluid, as to its redundancy. This Sciatica has likewiſe been cauſed by receiving violent blows on the hips, or ſtraining them in lifting great weights. Theſe cauſes ſeem, by the force of the Stimulus, to have attracted a greater quantity of blood towards the nerves of the hip. But I alſo have obſerved, that this diſorder violently attacks multitudes of thoſe who are troubled with a rheumatic, or venereal virus, and ſettles obſtinately in the hips. And I have numerous examples of people who have been attacked with it after having an iſſue, or ulcer of long ſtanding, dried up. Theſe things ſeem to tell us, that the Iſchiadic Nervous Vaginæ imbibe a depraved humour from the infected blood. In others, I have known this Sciatica ariſe from the leg or hip's, having been expoſed to a ſevere cold air: if we do not allow, in this caſe, that the exterior cauſe depraved the fluid of the Vaginæ of the Iſchiadic

Iſchiadic Nerve, which was before pure, we ſhall ſtill want an origin from whence we may trace the diſorder.

28. Now, as it commonly happens, that, however powerful theſe cauſes act, either for encreaſing or vitiating the fluid, they do not affect the other nerves of the body, but attack and obſtinately ſeize on the Iſchiadic alone; it may not be unworthy our labour to enquire whether the Iſchiadic Vaginæ have any particular diſpoſition to cauſe thoſe frequent diſorders there, which the other nerves feel not; and that they, above the others, ſhould take from the maſs of blood the redundant fluid, and acrid particles, and ſhould be ſo violently affected with external cauſes. And of cauſes there ſeems to me to be a number; but the chief are certainly Laxity and Amplitude, which is ſuch ſometimes in the external Vaginæ of the Iſchiadic Nerve, as is never found, as far as I know, in any other nerve of the whole body; for it is very well known that the Iſchiadic

dic Nerve, which has a kind of multiple origin at the ſpine, unites into one trunk, behind the great Trochanter of the thigh, and forms the largeſt nerve that is in the whole body. But there are four or five roots, which come ſeparately from the ſpine, united in this trunk; and theſe not only join their filaments in one, but alſo their Vaginæ. And theſe Vaginæ, which we will ſay were originated with the nerve, have no ſuperfluous laxity, but are exactly fitted to the nerve which they encloſe. But the laxity that I have aſſerted, ariſes from ſome other new Vaginæ, which form, on the forming of the trunk of the Iſchiadic Nerve. A copious cellular membrane, abounding with large Laminæ, unites them at the ſame place where the trunk is formed; but I have always obſerved it to be without fat. But although the Laminæ of this membrane ſeem to give Vaginæ to the nerves fortuitouſly, yet are they ſo exactly fitted to the nerve, which croſſes the hip, as if they were formed by ſome wonderful

ſkill

ſkill and deſign. Indeed, I have ſeen in the Iſchiadic Nerve of the body of a dead man, that theſe external Vaginæ, which we may call acceſſory ones, have received the new formed trunk of the nerve like a funnel; on one ſide fixing themſelves on the top of the Trochanter, and, on the other ſide, receiving the deſcending nerve in a kind of grooved orifice, and accompanying it even to the leg. And this Vagina is ſo neat, that if the handle of a lancet be introduced between the Nerve and the Vagina, the trunk of the Iſchiadic Nerve will ſeem to be contained like a ſword in a ſheath.

29. The preſſure of the adjoining muſcles does not ſufficiently aſſiſt the natural laxity of theſe outer Vaginæ of the Iſchiadic Nerve: theſe muſcles ſcarcely ever touch the trunk of the nerve, which is protected, as by a bridge, by the greater Trochanter. I ſuppoſe every one will obſerve, how theſe Vaginæ are adapted, by their conſtant laxity, to receive the

vapour, which the arteries exhale (21); and how very well contrived they are to retain it after they have received it. Add to this, that the arteries which run through the Vaginæ of the Iſchiadic Nerve, are larger than thoſe that run through the Vaginæ of any of the other nerves. This cauſes the ſupply of fluid to be more plentiful. This muſt be the reaſon that I have never found thoſe Vaginæ empty; and I have ſometimes ſeen the fluid at the bottom thickened, and almoſt gelatinous. And, indeed, this ſizineſs ſeemed to me to prove, that it had a concreſcible nature; as well as that the Vaginæ abounded largely with it. However, I imagine this ſizineſs came on after death, and ought to be attributed to a defect of warmth, which the nerves do not commonly want in life: for nature defends the trunks of the nerves, and the principal branches, by the general warmth of the part; but eſpecially by the bed of muſcles in which they lie. So that the fluid in the Vaginæ of the

nerves cannot be redundant, nor be congealed by the cold. Providence has taken ſuch great care to defend the nerves, throughout the whole body, that there are only two large nerves, which are admirably deſigned for their proper ſituation, without theſe conveniences: one of theſe nerves is in the elbow, and the other in the leg. The nerve in the elbow is conſiderably large, and called by Anatomiſts the Cubital: it runs almoſt directly under the ſkin, between the *Olecranon Ulnæ* and the interior *Condylus Humeri*, on the back part of the bending to the elbow; in which place the Cubital Nerve wants the defence of the muſcular ſtrata, which the other nerves of the body enjoy. A great part of the Iſchiadic Nerve in the leg has a ſimilar nakedneſs with the Cubital: for, as it has a multiple origin at the ſpine, it unites into one trunk, behind the great Trochanter; and deſcends, by a lax and eaſy paſſage, between the Trochanter, and the greater *Glutæus* Muſcle, the *Quadratus Famoris*, and the head of

the *Biceps* to the knee, under the *Biceps*, and *Semitendinoſus*. The nerve in all this track is ſurrounded, and not compreſſed by muſcles, but repoſes in ſoft lax Vaginæ. The trunk, when it reaches the knee, divides itſelf into two principal branches: the greater of theſe follows the direction of the trunk, and entirely enters the leg, where the *Gaſtrochnemius* Muſcle ariſes; under which it is pretty cloſely confined, and deſcends towards the heel bone: the other leſſer branch, winding externally on the leg, deflects to the fore part of it. This other branch is leſs, becauſe it is compoſed of fewer Stamina than the other; but the laxity of its Vaginæ is pretty near as great as that of the trunk. For, in branching off from the trunk, it deſcends obliquely, by the external, and lower part of the knee, paſſing over the bottom part of the head of the Fibula. In its whole progreſs, from the trunk to the Fibula, it has no muſcle, but runs under the ſkin. It is accompanied all the way with Va-

ginæ that are lax, and abounding with vapour, or fluid. After paſſing the head of the Fibula, it deſcends between the *Pæroneus longus* and the body of the Fibula: from thence it goes under the long *Extenſor* of the toes, and then between the long Extenſor of the great toe, and the *Tibialis Anticus*. So far it is buried with muſcles; but by and by we ſhall find it reſtored to its former liberty. For, as it paſſes the Extenſor of the great toe, about ſeven fingers breadth above the exterior ancle, it divides in two, and deſcends under the ſkin without muſcles, by the fore part of the leg, inclining a little to the outſide. It continues to deſcend under the ſkin, even to the ſuperior and exterior parts of the *Dorſum Pedis*, until it diſſipates into ramifications, and ends in the fleſh of the foot.

30. The trunk of the Iſchiadic Nerve, and the anterior branch that deſcends through the leg, do not run like the other branch, ſurrounded and encloſed

with muſcles; but for the greateſt part have either no muſcle, or a very ſmall one. Theſe parts of the nerve are encloſed in lax Vaginæ, abounding with a fluid, and therefore adapted, more than the Vaginæ of any other of the nerves, to receive the ſuperfluous humours, whenever the machine is overloaded with them. For the courſe of compreſſed bodies is always directed to the moſt lax parts, where there is the leaſt reſiſtance: and I imagine that the courſe of depraved, and acrid humours will, for the ſame reaſon, be the ſooner directed here to theſe Vaginæ. The irritable veſſels feel the full power of the acrid humours; and if the ſtimulus acts on them internally, they, on the other hand, render the acrid ſubſtance more active, and either retain or fix it within themſelves, or expel it ſtrongly into the neighbouring cellular ſpaces, which are at hand. The irritability of the coats of which the veſſels conſiſt, is owing to their tenderneſs: but the tenderneſs of the coats is always greater in veſſels

veſſels which are the leaſt ſubject to a preſſure of the neighbouring parts; which is the caſe with the veſſels which run through the Vaginæ of the trunk, and the prior branch of the Iſchiadic Nerve. It ariſeth therefore from the nature of the human body, that humours, whether abundant or acrid, have a fairer opportunity to diſplay their noxious qualities on theſe, than on the Vaginæ of any other nerve whatever. Every man, I ſuppoſe, is ſomewhat liable to this diſorder, though ſome may be more ſo than others; to inſtance, ſuch whoſe Vaginæ are naturally more lax, and expoſed more than is common. For as ſome are more ſubject than others to an *Ophthalmia*, or *Angina*, or *Catarrh*, according to the peculiar formation of thoſe parts that are the ſeat of the diſorders; in the ſame manner, ſome men may be more ſubject than others to this Nervous Sciatica, which is excited internally. But, as the poſterior Nervous Sciatica may ariſe from cauſes acting externally on the hip, one perſon here is as

liable as another to ſuffer. The nerve is ſo often deprived of a covering of muſcles, that the cold, or other external cauſes, may eaſily exerciſe their power on the trunk of the Iſchiadic Nerve, or the crural branch. I have more than once ſeen the other branch of the nerve, that runs to the leg, affected equally with the ſame cauſe. But it was affected now and then as if rays of pain had ſhot from the trunk; and if it chanced to be conſtantly painful, as though the cauſes were ſeated there, it happened but very ſeldom, and, as I think, only to ſuch ſubjects in whom that branch was not ſufficiently cloathed with muſcles, or when ſuch a quantity of acrid matter had fallen on the Iſchiadic Nerve, that it forced its way to it in ſpite of the muſcles (36).

31. I now flatter myſelf that I have produced ſome probable reaſons, and cauſes, of the generation of pain in the Iſchiadic Nerve (26); and why its trunk and branch, which deſcends to the leg,

leg, feel the track of the pain (29), and are more adapted to receive the cauſes, than the other nerves of the body, except the Cubital. Nor is there here any room to cavil at me, becauſe the Cubital Nerve has almoſt the ſame diſpoſition, and yet is ſeldomer affected with pain. For, although this may be owing to the Cubital Nerve's having but a ſmall track uncovered with muſcles, the pain is not ſo rare to be met with as is imagined. Indeed, I have often known the Cubital affected at the ſame time with the Iſchiadic Nerve; and eſpecially when the cauſe of the pain was internal, and might be communicated to both nerves. This conſent, and agreement of pain in the elbow and hip, have been obſerved by me more than once, in curing thoſe who were harraſſed with a rheumatic or venereal Virus; and I do not doubt, but that, if any one would attend to it, we ſhould frequently obſerve an alliance between theſe two pains. Nay, as I have often obſerved, the pain of the hips deſcend

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by degrees to the foot, or riſe from the ſoot to the hip, I have in like manner found the pain of the elbow aſcend to the ſhoulder, and reach to the extremities of the fingers. There is ſo great a ſimilarity and conſent between theſe pains, whether we regard the diſpoſition of the affected parts, or the nature of the pain, that I think Celſus, in judging theſe two pains, has done right to couple them together, and even put them upon a par. Indeed, if the name of the Sciatica had not taken its origin from the ſeat of the pain, but from its appearance, I myſelf ſhould not heſitate to call that pain of the arm, the *Nervous Cubital Sciatica*; for it agrees with the Poſterior Nervous Sciatica, in appearance, ſituation, ſymptoms, and cure, (39), (4), (55).

32. Since, therefore, an abundant, or acrid fluid, abiding in the outer Vaginæ of the Iſchiadic Nerve, may cauſe the Poſterior Nervous Sciatica, let us now ſee how it generates all the ſymptoms and

effects

effects of it. In the firſt place, if it ariſes from too great an abundance of fluid, the Vaginæ of the nerves will conſequently be ſtrained, and the incloſed nervous filaments compreſſed, ſo that the leg will be rather benumbed than painful. On the other hand, if the fluid be acrid, then the pain will be ſharp and permanent. But from whichſoever of theſe cauſes it ariſes, the pains will be exacerbated towards the evening; for at that time a man's body grows warm, and the pain is encreaſed, either by the more rapid circulation of the blood's cauſing a greater quantity of fluid to be thrown into the Vaginæ; or by the encreaſed heat's exciting or adding a greater ſtimulus to the acrid matter. The pain that the patient ſuffers in this exacerbation, can hardly be expreſſed. I have known ſome who have ſuffered ſuch excruciating pains, that they have ſpent whole nights ſleepleſs; and when the warmth of the bed was inſufferable, have paſſed the night in walking up and down the room, or, inſtead of the bed, have laid

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on the floor: and I have ſeen others who, in attempting to get a little reſt, have laid their heads on a pillow, and the other parts of their bodies naked on the bare ground. From the heat's encreaſing the pain, the reaſon may be deduced, why the iſchiadic pains encreaſe after hard drinking, or violent exerciſe, and anticipate the evening exacerbation. In the ſame manner we may account for the pain's being more violent in the ſummer ſeaſon, and greater when the patient lies on a feather than a ſtraw bed. How many have I ſeen riſe, after having endeavoured in vain to ſleep in a feather bed, and afterwards ſcarce able to ſtand on their feet, or extend the affected leg; till by degrees they raiſed themſelves up, as the cold air was admitted, or the leg chafed. Theſe ſeemed to benefit the ſick, as they aſſuaged the pain cauſed by the heat's ſtimulating the acrid fluid, and hindered a greater quantity from flowing into the nervous Vaginæ. But the heat, when it excites any pain, always proves that an acrid, or

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ſuper-abundant matter, are the moſt powerful cauſes of the diſeaſe. Of how great utility this indication is, they muſt be the moſt ſenſible who are employed in attending ſick perſons; for, amidſt the multitude of pains in which the greateſt part of diſeaſes conſiſt, we are often in doubt. We ſee ſome pains exacerbate in the evening, and aſſuage towards morning; whilſt others, on the contrary, have their exacerbation in the morning. The nature of both theſe pains then is manifeſtly different; but the cauſe of the difference is not manifeſt. However, the effects that heat are obſerved to have, ſeem to clear up this difficulty; for heat muſt be pernicious in thoſe pains that exacerbate in the evening, and be beneficial to ſuch as aſſuage at that time. Here we find it prejudicial, and there beneficial. The effects of heat are, rarefaction, ſolution, and commotion: therefore, in pains which aſſuage on the acceſſion of heat, a ſolution and commotion of the peccant matter is of ſervice, becauſe it was prejudicial

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on account of its groſs and heavy nature, and oppreſſed the affected part. For this reaſon, the pains that exacerbate in the morning are rather gentle, like a torpor, and are curable by adminiſtering and applying hot remedies. I knew a patient who was cured of a pain of the thigh, ariſing from conſtant leaning on his right ſide, by drinking wine pretty liberally. On the other hand, in pains that encreaſe by heat, there can be no doubt, that either the too great abundance of matter, which is encreaſed by the encreaſed circulation, is the cauſe of them; or that its acrid quality is agitated, and rendered more pungent by heat, and ſet the pains, as it were, in a blaze. From what has been ſaid, we may explain the reaſon why aſthmatic perſons feel themſelves more troubled with their diſorder towards morning, as their breaſt, I have often obſerved, is lined with a viſcous, groſs matter; and why gouty and rheumatic perſons, whoſe pains are owing to ſharp humours, in the evening.

33. When

33. When the Iſchiadic Nerve is affected, it changes its habit by degrees, and takes another at the ſame time, that the Sciatica comes on, or acquires not long after. The habit it takes is a *Dropſy* of the external Vaginæ of the nerves. If the Sciatica ariſes from too great an abundance of fluid, the dropſy exiſts immediately with it; but if it ariſes from the ſharpneſs of the humours, it follows a ſhort time after: the concourſe of humours will be every day encreaſed by the ſtimulus of the acrid matter, and the ſtimulus muſt act powerfully in living ſubjects. This quantity will be directed as well through the filaments of the Iſchiadic Nerve, as the ſanguiferous arteries of the Vaginæ, and will encreaſe in proportion as the irritation is more or leſs violent; and an irritation there muſt be whenever there is pain. Therefore, at the time that the pain comes on, both the arteries and nerves are irritated; the nerves cauſe a convulſion of the muſcles, and the moſt painful cramps (5); the arteries overfill

overfill the fleſh of the leg, and pour a greater quantity of fluid into the nervous Vaginæ, which contain the ſtimulus (34). Thoſe cramps are commonly followed by a temporary varicoſe inflation of the veins, which run under the ſkin of the affected part; a thing that has been obſerved by me in the vague cramps of hyſteric women, as well as by *Martian* (5), in the Iſchiadic Paroxyſm. An elderly woman, who was lately troubled with theſe cramps, which are vulgarly called the *twitching of the Nerves*, found her fleſh ſwell in the ſame places where ſhe was ſeized, *viz.* on the back of the hand, the elbow, arm, neck, and leg: and the turgid veins of the inflated parts look livid all the time of the continuance of the pain. I think this inflation was owing to too great a quantity of blood's being collected into the lax veins, as by a kind of thirſty influence; where all that quantity of blood, which cannot pervade the interior ſeat of the leg, which is ſhut up by the convulſion, is forced at the time of the

the cramp. The cramp is a ſhort, violent, and involuntary convulſion of the muſcle, ſo that the blood cannot pervade the convulſed parts.

34. The blood, however, pervades the ſtimulated arteries of the leg, and runs, or rather ſhoots ſwiftly on, overwhelming thoſe parts where the arteries end, and rendering them more heavy; amongſt theſe are the Vaginæ of the Iſchiadic Nerve, whoſe arteries are chiefly agitated by the ſtimulus that is near them; the blood fills them with a great quantity of fluid, which, by the leg's inactivity and torpor, and the denſity it has acquired in conſequence of the torpor, eaſily finds a reſidence in them (30). Therefore, the Vaginæ of the Iſchiadic Nerve become dropſical; and this dropſy, when once it has made its attack (if the pain continues) increaſes every day, and confirms itſelf. The quantity of fluid that flows into the Vaginæ every day, whilſt the pain laſts, is greater than can be reſorbed by

the veins; partly, becauſe moſt of the mouths of the veins are oppreſſed by the inroad of the fluid; and partly, becauſe the fluid is rendered every day more unfit to be reſorbed: for the fluid, which is impregnated with a coagulum, is more adapted for reſorbance when it is new; but if it ſtagnates long in one place, however proper for its reception, it cannot be again reſorbed. For the more groſs and glutinous parts of the lymph, with which that vapour is impregnated (29), are ſeparated, by long continuance in the ſame place, from the more aqueous parts, and ſtick to the ſides of the cavities in which they are encloſed; and by little and little unite, and form, like a paſte, a new membrane, which lines the internal ſides. The conſequence of this is, that the mouths of the abſorbent veins are in a great meaſure blocked up, and cannot perform their natural function. I have obſerved this to be the caſe in all thoſe who have been troubled with a dropſy of the abdomen of the breaſt; and have

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ſeen the ſides of the cavities, more eſpecially of the breaſt, covered with ſtrata of membranes of this kind; that I plainly underſtood the reaſon why, neither purges, diuretics, nor ſudorofics, have the power to draw the water off in a confirmed dropſy. Upon the Iſchiadic pains coming on, the Vaginæ of the nerve begin to ſwell, and unleſs the matter that cauſes the pain be conquered, they become dropſical: and unleſs the dropſy be diſſipated, it becomes obſtinate, and encruſts over the ſides of the nervous Vaginæ with a kind of buff coat. However, this dropſy may poſſibly be in ſome meaſure beneficial, for by a greater influx of fluid, the acrid matter, which before adhered to the nerve, is diluted and mingled with it; and by this means being entangled in the ſizy matter, its active power is repreſſed, and becomes leſs hurtful. Here, I think, I ſee the reaſon why the Sciatica is in the beginning continual, and afterwards becomes intermittent (4). The Sciatica is generated, as I imagine,

by an acrid matter, which is very active until it is diluted, and cauſes a laſting and continual ſtimulus; but when mixed with the fluid already mentioned, it ceaſes almoſt entirely to be troubleſome, unleſs ſome new cauſe accedes to render it ſo. But it receives a new cauſe or impulſe, either from extraordinary heat, or encreaſed muſcular motion (32); from which cauſes the intermitting Sciatica is often exacerbated before the paroxyſm is expected. Therefore, in ſuch caſes, as long as the collected humour takes up its reſidence between the Vaginæ of the Iſchiadic Nerve, and is at reſt (which is commonly in the day-time) there is rather a torpor than a pain in the leg; which ſenſation, I imagine, ariſes from the weight of the collected fluid's preſſing continually on the nerve. Upon the pains coming on, the torpor ceaſes, but returns when they go off. But however ſerviceable this dropſy may be in alleviating the pains, the eaſe it brings cannot overbalance the injuries it does by little

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and little in the end. For, though the pain intermits when the dropſy comes on, yet the diſorder is more confirmed, and grows more obſtinate, and cauſes the pain to be more exquiſite at the time of each exacerbation. This more acute pain may ariſe from theſe cauſes; either becauſe the blood, having contracted a depraved quality, depoſits a freſh acrid matter on the nerve; or becauſe the matter growing worſe by long continuance, the contagion is ſpread wider. The power of contagion is felt moſt ſeverely when the acrid matter that irritates the nerve is of a venereal nature; for, by its ſizy quality, it fixes on the Iſchiadic Nerves, as it commonly does on other parts of the body that are not the warmeſt, and where it may reſt free from diſturbance.

35. Let us therefore call the dropſy of the trunk, and of the firſt crural branch of the Iſchiadic nerve, a *confirmed Poſterior Nervous Sciatica*; for this dropſy, if it is neglected by the patient, will cer-

tainly bring on a ſemi-paralyſis of the leg. If the Iſchiadic Nerve is long loaded with the weight of the circumambient fluid, its nervous filaments will, by degrees, be hurt by that preſſure, and but weakly perform their offices to the nerves below, or to the muſcles. For this indeed is the cauſe of the ſcene that follows thoſe Iſchiadic pains, ſuch as an Atrophy and Semi-palſy (7). This dropſy, which produces ſuch great effects, and which hitherto I had only conjectured to be in the Iſchiadic Nerve, I lately was in hopes to have proved experimentally in the diſſection of a body of a man who had ſuffered this Sciatica; an opportunity which offered unexpectedly, whilſt I was about this work: but there were many obſtacles to my reaping the ſatisfaction I wiſhed from this diſſection; for the man was about forty years of age, and, about four months before he came to the hoſpital of incurables, in journeying from Salernum to Naples, he was forced, by I know not what cauſe, to walk,

walk, at night, barefooted, through a ſtream of water, for a conſiderable way. Some time after, he was ſeized with a pain on the ſoal, and the back of the right foot, which aſcended, by degrees, even to the hip, in the ſame direction as the Nervous Poſterior Sciatica obſerves in deſcending. The diſorder, which was ſevere in the firſt attack, was not relieved at all by repeated bleeding, nor by various ointments, nor repeated draſtic purges; till at laſt he was ſeized with an acute fever, about the 16th of June, and in that ſtate brought to our hoſpital. The fever was of the epidemic putrid kind; which, as he was a man of the lower ſort of people, had attacked him, as well as many others of the ſame rank, who owed their diſorder to bad proviſions, in the great dearth of the preſent year 1764. He was greatly emaciated, and the colour of his ſkin was greeniſh; appearances that were frequently obſerved in thoſe men who had ſuffered by the dearth; and perhaps ariſing from long living on crude vege-

tables: his ſtrength was much impaired, and his ſtools were lax and thin. The fever being happily conquered, the return of health brought with it, to this exhauſted creature, a great appetite, or rather hunger. I adviſed my patient to be cautious, and ſpare in his food, that he might recover by degrees, and not overload the power of digeſtion, which was as yet very weak. However, I will firſt mention, and give an account of the method I purſued in the cure; as the Iſchiadic pain did not go off by the laxity of the belly in the fever, but continued very ſevere all the time, being twelve days. He ſeemed out of danger, and the pain being conſiderably leſſened, perſuaded me that I ſhould make an entire cure; but the patient, being not maſter of his cravings, and appetite, began to devour a multitude of things, without order or ſelection. He was again taken with a violent purging, which, in about three days, ſo weakened him that he died. When he was dead I thought there was a fair opportu-

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nity offered to prove my opinion of a dropſy of the Iſchiadic Nerve in the Poſterior Nervous Sciatica; for, notwithſtanding the patient, in the laſt days of his life, felt but little of the pain of the Sciatica, or ſcarce any, at the bottom of his leg, I did not however deſpair, if the Iſchiadic Nerve had been really dropſical, to have found ſomething in it which might ſhew, if not the preſence of the diſorder, at leaſt the preceding cauſe of it. The body was brought into the diſſecting room, and we began the diſſection. Here the ſtate I obſerved the external parts to be in, took away all hopes from me; for the buttocks had corrupted, and bred worms, and each foot, as far as the middle of the Tibia, had an Anaſarca; things, of which, whilſt the patient was alive, no one had taken notice, and therefore were ſuppoſed to have crept upon him about the laſt days of his illneſs. Notwithſtanding theſe things, we began to diſſect. In the abdomen we obſerved clearly ſuch defects, as pointed out, in

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ſome meaſure, the cauſes of the flux; of theſe I may, perhaps, give ſome account in proper ſeaſon; and now we turned to examine the right Iſchiadic Nerve. When this was laid open, we found it appeared, clothed as it was, with its Vaginæ, of a higher colour than uſual, from the hip to the leg; not owing to the largeneſs of the veſſels which pervade the Vaginæ, or to their fullneſs, but to a certain unuſual tinge of the ſurrounding membranes, for they were all of them yellow. Therefore, upon cutting the external Vaginæ of the nerve, and wiping off the fluid, of which they had certainly no more than their natural quantity; we obſerved the Vaginæ more thick than uſual, and that the colour of them was not painted on them, but ſtained in their ſubſtance; a colour from which the nerve, though it was paler, was not entirely free. The nerve was whiter, and had a greater quantity of fluid from the head of the Fibula to the bottom of the foot; and lower down, from the middle of the Tibia, there was

ſo great a quantity, that the Vaginæ were forced conſiderably from the incloſed nerve, to make room for it. I found ſome doubts ariſe immediately, whether this dropſy of the lower part of the nerve was not the remains of the dropſy of the Sciatica, before mentioned; or the progeny of that which had invaded the adjoining fleſh. But the dropſy of the nerve extended beyond the ſeat of the *aëdema* of the ſkin; ſo that it might be ſuppoſed to be the remains of the dropſy of the Sciatica. The uncommon colour alſo of the Vaginæ of the Iſchiadic trunk, from the hip to the leg, ſeem to bring a proof what ſort of lymphatic inundation had before ſpread over thoſe parts (33), (31). But, as it was now in the heat of ſummer, and the open abdomen of the body, and the buttocks ſtunk intolerably, and we were all, not without reaſon, much afraid of infection. I did not examine the left Iſchiadic Nerve; which perhaps might have ſhewn whether the colour of the right nervous trunk was in reality

reality accidental, or natural and proper in that particular man; and therefore dared not determine any thing from this diſſection.

36. When I conſidered the ſeat of the ſtimulus, the nature and obſtinacy of the Sciatica (although the diſſection did not plainly demonſtrate it) I yet could not help thinking there was a dropſy in the Sciatica; and the many cures which I have happily performed in this diſorder, have confirmed me in my opinion. And if even the moſt careleſs, negligent, not to ſay ſuſpicious man, would give the ſlighteſt attention to them, he might be convinced of the truth of it. However, I will not begin to demonſtrate this, before I have eradicated a conſiderable doubt that may ariſe, and ſuch a one as is neceſſary to clear up. It is this: When the Iſchiadic Nerve is dropſical, does the dropſy extend as far as the pain, ſo as to take up the whole track of the nerve from the hip to the foot; or is it only at the

the upper trunk of the nerve, where the pain at firſt commonly begins its attack, and may be propagated along the remaining part of the nerve to the foot, by a kind of ſympathy? Here I have ſome very cogent reaſons to induce me to believe that the dropſy accompanies the pain in a confirmed Poſterior Nervous Sciatica (3). For if the nerve in the true Sciatica pained beyond the hip by ſympathy, how happens it, that the pain extends to the knee, and not always to the leg (3)? And why ought the anterior crural branch of the Iſchiadic Nerve ſo often to form the ſympathy with the trunk, and not the poſterior, which alſo appertains to the leg? I would aſk, whether it is not becauſe the pain reſides in thoſe parts of the nerve, which contain the cauſe of the pain? Beſides this, if you preſs externally any part of the Iſchiadic Nerve, the pain of the true Sciatica, which was before lulled to reſt, is commonly awakened; which is a proof to me that the cauſe of the pain muſt

reſide in that part, where it can be externally ſtimulated up, and incited. But the cauſe of the pain is accompanied with a dropſy; for the Iſchiadic Nerve, whether the pain begins at the hip and ends in the foot, or ariſing in the foot aſcends to the hip, is, in every part where the pain is obſtinately fixed, dropſical. I would be underſtood to mean this, in regard to that pain of the nerve which is obſtinate and fixed, and conſtitutes the true Sciatica; for there are ſome flying ſtabs of pain in the Iſchiadic Nerve, commonly called ſhooting pains, which are generally propagated from the hip to the branches of the trunk. Theſe are flying pains, and do not conſtitute the obſtinacy which is the characteriſtic of the true Nervous Sciatica: I would call them *Iſchiadic Spaſms*.

37. To ſum up, in brief, what I have been ſo prolix in explaining in the foregoing chapters; I lay it down as a truth, that the permanence of a plentiful and irritating

irritating matter in the Vaginæ of the Iſchiadic Nerve, cauſes the Nervous Poſterior Sciatica; which Sciatica, if the ſtimulus of the acrid matter be very ſharp, may begin with an inflammation of the Vaginæ, and the diſorder be very ſevere and obſtinate. This is the firſt ſtage of the diſeaſe: then comes the dropſy and confirms the Sciatica. If this dropſy continues for any time, it ſo weakens the nerve that it cannot any longer be ſerviceable to the muſcles; ſo that, by a defect of the nerve, and the hebetude of the long unemployed muſcles, a ſemi-palſy of the leg comes on. This is commonly the laſt ſtage of the diſorder. The Sciatica has three periods, which require the aſſiſtance of art: its onſet is often attended with an Inflammation, its progreſs with a Dropſy, and its cloſe with a Semi-paralyſis. All theſe require the ſkill and art of the phyſician to maſter and cure.

38. I will now give an account of ſuch things as ſeemed, in the courſe of a long experience, to be of ſervice in theſe different ſtages of the diſorder. In the beginning, when the diſorder was very violent and continual, blood-letting was always a very great relief to the patient, eaſing the pain, and ſometimes totally maſtering it; eſpecially if a ſuppreſſion of an accuſtomed flux of the piles, or menſtrual diſcharge, had been the cauſe of it. Any one can account for the utility of this method, who knows that bleeding leſſens the quantity of humours, the powers of life, and the heat of the body; things which cauſe the Sciatica, or render it more violent (32). However, we muſt point out the place where phlebotomy is to be performed; for one and the ſame place is not always beneficial in the ſame ſtage of the diſorder. If the diſorder ariſes from a ſuppreſſion of the piles, it is alleviated by applying leeches to the Corona of the Anus, to draw off the

the ſuperabundant blood from that part: bleeding in other parts I have obſerved not to be ſo ſerviceable as here. I once ſaw an inſtance of this ſort; a man, who was troubled with the Sciatica, felt, on a ſudden, wandering pains in the abdomen; but in a day or two after he had ſuffered this, the piles burſt forth by a ſpontaneous effort of nature, and in about three days afterwards the Iſchiadic pains were totally driven off by the flux. For there is a great conſent between the hæmorrhoidal parts and the legs; and I have often known the Iſchiadic Nerves grow painful on an approach of the piles, or menſes; and after the flux of theſe was ſpent, the pains entirely vaniſh. An evacuation is very beneficial to ſuch as are ſeized with the Sciatica through a ſuppreſſion of the menſes; and I lately ſucceeded very happily in an attempt to bring on the hæmorrhage, by applying four dry cupping glaſſes, repeatedly, to the inſide of each thigh, and the proximate anterior parts, of a woman near forty

years of age. I tried this about the time that ſhe expected her uſual evacuation. If this experiment does not ſucceed, bleeding in the feet is of ſervice; for I have found, by conſtant experience, that nothing is ſo efficacious in bringing on the uterine flux, as bleeding in the foot. The reaſon of this may be, that as it draws the impetus of the blood towards the lower parts, the impetus is alſo encreaſed at the Uterus. So that I have ſeen a ſuppreſſed uterine flux brought on again by this method; an expected one accelerated; and a late one excited. Nothing acts more powerfully on the Uterus than this, or ſerves better as a ſpur to incite the evacuation of the menſtrual diſcharge, or the lochia; and nothing will anſwer your purpoſe better, if you want to expedite a difficult labour, or accelerate the operation.

39. But here a queſtion may ariſe, Whether it is better to draw off the blood from the affected, or the unaffected foot,

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in the Sciatica? as I myſelf was once of opinion that bleeding was prejudicial, and thought that the blood brought to the affected part, by the evacuation, muſt encreaſe the diſorder. Even *Cælius Aurelianus* ſeems to have been of the ſame opinion; for, after ſaying that many had practiſed bleeding in the ancle and leg in the cure of the Sciatica, he aptly enough remarks, that the parts of the leg being filled by this means, would grow more painful, as the ſudden evacuation would draw a greater flux of matter towards them. But as I had obſerved, in the writings of very famous men, that they ſpeak very highly of evacuations of blood in the foot, on the ſame ſide that the part affected lies, as a thing that almoſt inſtantly alleviates the pain; I was willing, incredulous as I was, to try the experiment: and I found it anſwer; for I have twice known the Sciatica totally cured on opening a vein of the knee; and oftentimes wonderfully alleviated. But I have known it decamp more ſpeedily, and

often on opening a branch of the Iſchiadic Vein, either before or behind the exterior ancle, in the ſame manner as Zechius* has directed in this diſorder. I have now a multitude of ſtanding examples and proofs of the ſucceſs of this method, for near four years, contrary to the opinion I formerly entertained. I will produce a very late inſtance: A man of about forty years of age, in attempting to lift a great weight, was ſeized with a pain in the left ſeat of the Os ſacrum: the pain deſcended every day, by degrees, along the Iſchiadic Nerve, and formed the Poſterior Sciatica: the man could not extend his leg, but was tortured from the evening for moſt part of the night. A month after his ſeizure he applied to me: I ordered twelve ounces of blood to be drawn from that branch of the Iſchiadic Vein which runs before the exterior ancle on the affected ſide; after this the pain gradually vaniſhed in about two days,

* Conſult. med. 43, p. m. 467, edit. Francof.

and left behind, about the Os ſacrum, a kind of ſenſation that was not at all painful, and could ſcarce be called its remains. Therefore the queſtion is, Whether bleeding in the part affected is beneficial on this account; that by drawing out the blood the veins are evacuated, and, by their ſuction, attract very powerfully the fluid that is collected in the Vaginæ of the Iſchiadic Nerve? I have more than once obſerved bleeding to have the ſame effect in the Gout as in the Sciatica; and in a gout of the abbeſcent, and, as it were, of the phlegmatic kind; and, what is ſtrange, found, that on opening a vein, which ran along the tumid and painful part, the ſharp pain was not only mitigated by the evacuation, but in a few days this diſorder, which is commonly ſo ſlow and obſtinate, peaceably quitted the field.

40. If by bleeding (even, if you chuſe it, repeatedly; though it has often had ſuch an effect, that as ſoon as once performed it has perfected a cure) the diſorder does

not entirely vaniſh, you may then call to your aid two very efficacious auxiliaries; a prevalent *eduction* of the belly, and *frictions* of the part affected. Theſe two are to be adminiſtered according to their known laws. The belly is to be incited for two reaſons; that the veins may not acquire any noxious quality from thence, which may ſpread the matter of the Sciatica wider into the blood; and that, by evacuating the humours of the inteſtines, the powers of life may not be ſo active, and the courſe of the blood leſs rapid towards the part where the Sciatica lies. Indeed I have found, by experience, that there is a great relation between the belly and the legs; and have ſeen the legs grow torpid, and benumbed, by means of coſtiveneſs, and immediately grow eaſy and free upon the belly's being looſened. I ſaw a rheumatic perſon, who, in conſequence of having his belly bound for a long time, had a torpor, and ſenſation of weight in his legs; but after having a ſtool procured by means of oil, his freedom of walking

returned immediately. *Hippocrates*, as well as *Cælius Aurelianus**, affirmed that a Dyſentery was beneficial to perſons troubled with the Sciatica; therefore, if perſons ſo troubled have ſtrong ſtinking eructations, or a diſagreeable murmuring commotion of the Hypochondria, but eſpecially the right, it indicates the preſence of depraved humours, which, as they ſay, lay ſiege to the *primæ Viæ:* here an emetic will be of great ſervice, and may be repeated, if the diſorder is obſtinate. Half an ounce of emetic wine, which I lately gave a perſon troubled with this Sciatica, every morning, for three days, brought out with it a great quantity of a ſizy yellow humour; and the Sciatica in a ſhort time after was entirely conquered. If an emetic cannot be given, which is oftentimes the caſe, the belly muſt be moved κάτω. This may be done two ways, either by a clyſter or a purge. I have always found a clyſter anſwer beſt.

* Loco proxime citato, p. m. 549.

A diluent one ſhould be injected in the evening; if it can be done, it may be alſo injected before the morning comes on. It ſhould be prepared of a decoction of mallows, of honey, and a little manna. By theſe kind of clyſters I have ſeen the pains of the *Lumbago* often, but thoſe of the Sciatica always, wonderfully alleviated. If theſe do not do the buſineſs, clyſters a little ſharper are to be uſed; though theſe muſt be adminiſtered cautiouſly, for I I have known ſharp ones very prejudicial (45). I commonly uſe for this purpoſe the old pickle of olives, ſufficiently tempered with a decoction of mallows, or St. John's wort. The beſt time for adminiſtering the gentle clyſters is the evening; for, by evacuating the fæces, they render the attrahent power of the inteſtines (which is very great during the time of ſleep, owing to the default of the vitiated contents) in ſome meaſure leſs prejudicial to the patient. They nouriſh the inteſtines, and afford an agreeable cooling ſenſation, and commonly alleviate the

the approaching or beginning exacerbation. I order the clyſter to be injected, if poſſible, an hour before the exacerbation is expected; nay, I have known it adminiſtered and repeated with great ſucceſs even in the paroxyſm. But I generally order ſharp clyſters (which create a ſtimulus, and prove beneficial by drawing the humours to the inteſtines) to be adminiſtered in the morning; as I have obſerved the pulſe to be always accelerated by them, and that they cauſe a heat, and greater uneaſineſs to the patient: for I imagined that if they were injected in the evening, the nocturnal Sciatica would be exacerbated by them. I do not uſe purges, for they are ſeldom beneficial; I have even known them cauſe a conſiderable aggravation of the pain.

41. However, theſe auxiliaries oftentimes leſſen the diſorder, but do not entirely cure it; and this is chiefly the caſe when the Sciatica is of any ſtanding; for then, as the mouths of the abſorbent veins,

veins, which open into the Vaginæ of the Iſchiadic Nerve, begin to be blocked up by the accretions of acrid matter, their powers are to be excited, and in ſome meaſure aſſiſted. This, frictions effect admirably; and, as I have had ſome little experience in the uſe of them, I will offer a hint that will not be unprofitable. For, that friction may be beneficial to the patient at this period, it ought to operate in ſuch a manner, as to aſſiſt by its preſſure, and inſinuate the inert humour, which is entangled in the Vaginæ of the nerve, into thoſe mouths of the veins which are, perhaps, blocked up; and to cauſe it to leave, by degrees, the ſtation it occupied in the Vaginæ by its ſluggiſh quality: but great care muſt be taken that the friction only drives out the old humours, and does not draw new. Friction, therefore, is to be uſed in ſuch a cautious manner, as that it may not be a ſtimulus, but only a gentle preſſure. This is, indeed, a very difficult thing. But, however, I find my intentions generally anſwered,

anſwered, by gently ſtroking the part affected along the track of pain, with the naked hand, without flannel, or any other ſtimulating ſubſtitute. And, leſt the hand or fleſh ſhould grow warm by this friction, and draw a quantity of blood to the part, I order it to be ſmeared plentifully with oil. The friction is to be uſed every morning, for a quarter of an hour at a time, with proper intervals; by which method I have known the pains of the Sciatica totally vaniſh by degrees. I uſe oil of olives, or melted ſuet; which the patient imagines is the great remedy, and the thing that frees him from his diſorder: and to ſuch as mete out health under the appearance of remedies, I recommend the *Butyrum ex Cacao*, the *Oleum Vulp.* freſh prepared; or vipers oil; or a thing whoſe ſcarcity will recommend it, human fat. It is for this reaſon that patients chuſe this or that oil for the friction. The more oil is poured on, the leſs apt the fleſh is to be inflamed. I always make uſe of cold oil, for when warm

warm it encreaſes the pain. I have made ſo many obſervations to prove the truth of this, that I wonder the antients could talk ſo much of many hot ointments, and fomentations, being of great ſervice in the Sciatica; and amongſt theſe *Aurelianus*. But I now remember a caſe that occurred four years ago: A gentleman, after having had the gout, was ſeized with a pain of the hip, which deſcended to the foot. He was adviſed to anoint with bear's greaſe a little warm, and then to clap a burnt brick, as warm as it could be borne, to the anointed part. It was done as directed; but the pain was ſo conſiderably increaſed by it as to be intolerable, and extorted the moſt miſerable complaints from the patient. Beſides all this, a moſt violent cramp came on. The brick was then thrown aſide, and the anointed part wiped clean. The convulſion continued for a week almoſt, though it abated every day. By regimen and reſt, and drinking a quantity of diluting whey every day, the pain became tolerable again,

again, and the leg could be moved with eaſe. Theſe, and other ſimilar examples, have taught me how pernicious the cuſtom is of uſing warm unctions and fomentations. Let the unction therefore be with cold oil; for it is deſigned to lubricate the part, and to prevent heat from ariſing. Frictions, performed in the manner I have directed, will be found to be of ſervice. The three methods of cure, which are of great note amongſt the antient, as well as modern phyſicians, for the Sciatica, ſeem to me to have virtues ſomewhat ſimilar to thoſe of friction; I mean riding in a carriage, or otherwiſe; ſinging; and electriſation. *Cælius Aurelianus* would ſuit his exerciſe to his patient; firſt, by means of a portable bed, and then of a * ſedan, or chair; and *Themiſon* thought it neceſſary for a perſon troubled with the Sciatica to ride on horſeback†. Perhaps geſtation is, not without reaſon, recommended by them as

* Loco citato, p. m. 552.

† Apud Cæl. Aur. loco citato, 556.

a more

a more proper exerciſe than walking; for walking brings the blood to the part affected, and I knew a woman who brought the Sciatica on herſelf by walking unuſually faſt, for two days together. But geſtation gently ſtirs the humours, ſtagnating in the Iſchiadic Nerve; and by a gentle concuſſion, and tremulous motion, inſinuates them into the Meatus of the abſorbent veins. It has the advantages of friction, without preſſure: and I have known riding in a coach eaſe a gentle Sciatica much, and yet be of no ſervice in a more ſevere ſtate of that diſorder. Singing is of a much older date, and attributed to the invention of *Pythagoras* *; though ſome attribute it, perhaps with more reaſon, to *Hiſmenias* the Theban, of whom *Boethius in muſicis* ſays, that he cured many, who were troubled with the Sciatica, of their pains, by the power of muſic †. I think *Philiſtion* means this

* Cæl. Aur. loco citato, p. 555.

† Crinitus de honeſta diſcip. lib. xii, 342, edit. Gryphii, 561.

Hiſmenias,

Hiſmenias, when he ſays that a certain piper relieved the pain of the Sciatica by the melody of his notes *. Although *Soranus* judges this to be the empty boaſt of a fool, I would not preſume to reject it as an idle notion; for we find, when muſic touches us, our fleſh thrills, and ſometimes the legs are ſet involuntarily in motion, as if beginning to dance, as Philiſtion has long ſince rightly remarked. That thrilling palpitation, which is excited by muſic, may be like that which a vehicle excites, and equally as ſerviceable. This is, perhaps, the only reaſon to be given for electricity's being of ſervice; (which, as *Veratius* relates †, cured a Nervous Sciatica of nine months ſtanding;) that it excites the palpitation of the muſcles ſurrounding the Iſchiadic Nerve, and ſo expells the intercepted humour.

* Apud. Aurel. loco proxime citato.

† Ozzervazioni Fiſico Madiche intorno alla Eletricita in Bolog. p. 39.

42. How-

42. However, in purſuing theſe methods of cure, it ſometimes happens that the pain is ſo violent that we are obliged to uſe means to leſſen it in the interim, as the cauſes of it cannot be eradicated in haſte; for oftentimes reſt, which is ſo neceſſary for the recruit of the human machine, is entirely ſuſpended by the ſeverity of the pain. To procure it, we have an excellent remedy at hand in *opium:* a grain of which, ſwallowed in the evening, I myſelf have known relieve the patient conſiderably. *Abraham Kaavius Boerhaave* is a witneſs for the truth of this, as he tried the experiment on himſelf*. But when the patient is ſo accuſtomed to opium as not to feel any effect from it, the doſe is not to be increaſed (becauſe I have obſerved the Iſchiadic Torpor encreaſed by theſe means) but a little opium is to be diſſolved in half a pint of milk and water, and injected as a clyſter, after the inteſtines have been cleanſed by

* Impetum faciens dictum Hippocrati, num. 440.

common

common clyſters. A grain of crude opium may be injected this way; or ſome drops of *Sydenham's anodyne tincture*; or you may inject half a grain of opiated laudanum, or *Quercetanus* Nepenthes: all theſe I pronounce to be good, on various experiments. Opium, when injected by the *Anus*, is more beneficial, perhaps, for this reaſon; that being free from a mixture of the bile, and other inteſtinal humours, which perhaps take from its virtue, it enters the blood in a purer and more potent ſtate. Indeed, I have ſeen aſthmatic convulſive attacks become leſs frequent by the uſe of opium as a clyſter; and have even known a colliquative Diarrhœa, in hectics, often abate upon a very ſmall doſe of opium's being adminiſtered this way; when a larger doſe ſwallowed has rather encreaſed it. I am almoſt perſuaded that the excellence of opium, here, is owing to its not being vitiated with the bile; for there is a thin kind of oil in opium, in which its ſoporific quality conſiſts; which being drawn off (as by boiling it

in water, when the oil ſeparates, and ſwims on the ſurface, a ſmall grain of which given to a dog in his drink, will kill him inſtantly*) what remains behind of the opium is entirely harmleſs, as *Stahl* has proved experimentally†. Therefore, if the oil of the opium be mingled with the oil of the bile, and its acid part; it will be by degrees weakened, and loſe its ſoporific virtue almoſt entirely: for it is well known what power acids have in deſtroying the ſoporific virtues of plants. I think, from the bile's efficacy in enervating the power of opium, we may bring a reaſon why men perceive opium to have leſs effect on them, in proportion as they are more accuſtomed to take it; a thing which many examples prove to be true‡. For, as the powers of life

* Newmannus Chemiæ, p. 969. Buchnerus de opii effectibus.

† Apud Jo. Chriſt. Jacobi de viribus hypnoticis a miner. regno, &c. § 2.

‡ Confer. Valliſnerii Epiſtol. ad Lu. Teſt. Op. vol. 3. p. 62, edit. Venet. 1733.

grow

grow languid by the virtue of opium, the ſecretions of the humours, from the arterial blood, which are carried on in the body, are leſſened; and the ſecretion of the bile is the only one that remains, not perhaps ſo much undiſturbed as increaſed. As this comes from the venal blood, whoſe motion being retarded, a greater quantity of bile is ſecreted: therefore, this bile is redundant in the inteſtines, in proportion as a perſon has been a longer or a ſhorter time accuſtomed to the uſe of it: ſo that the matter which deſtroys the virtue of the opium encreaſes, as the habit of taking it. But as opium encreaſes the quantity of bile; in giving it in a flux of the belly which is cauſed by the bile, may it not encreaſe the flux, after its firſt operation ceaſes, as much as it diminiſhed and leſſened it before?

43. The opinion which I entertained, that opium has the property of encreaſing the quantity of bile, is confirmed by the diſſections of animals killed by it, whoſe

inteſtines, I obſerved, were filled with a conſiderable quantity of bile. Although *Ravius**, who was intent upon another matter, has remarked this, as he found a great deal of bile in the Duodenum of a dog ſtupified with opium; as alſo that the *Veſica Fellis*, and the *Ductus Choledocus* were turgid with bile; yet I ſhall attempt to confirm the opinion by a ſingular experiment on the bird kind, which I tried for another purpoſe, five years ago, and lately repeated with the ſame ſucceſs. In the month of September I injected a bolus of crude opium, of about twelve grains weight, into a very fat quail. I added water, that I might the better make it into a bolus, which it tinged of a yellow colour. This being injected, the quail at firſt ſeemed very well, and as lively as the others that were its companions: but by and by it began to droop, and betook itſelf to the corner of the coop, ſo ſtupified, that, though before at

* Impetum faciens dictum Hippocrati, num. 434.

the ſight of a man it would ſpring on the wing, and dart againſt the covered top of the coop, it now was quite motionleſs and torpid. The bird had ſhut its eyes, and lay upon its belly, from the firſt hour of the night, the time I injected the opium, to the fourth, when I went to bed. At the eleventh hour, when I aroſe, I ſuppoſed the bird to be dead; however, I found it alive, but ſtill ſo ſtupified, that when ſtruck it would not ſtir, but juſt opened its eyes, and then ſhut them again: when the eyes were open, I obſerved the pupil was more contracted than in the other quails that were confined in the ſame place. It remained to the twentieth hour in this ſtate, and then died. There was this difference between the events of the experiment I tried on the quail of which I am now ſpeaking, and that I tried the firſt time; for in the firſt experiment the bird died within ſix hours, convulſed with violent diſtentions of the limbs; in the ſecond it died calmly and quietly. The opium I uſed in the one had been carefully

preſerved, but what I uſed in the other ſeemed a little decayed. This, when it died, voided a very ſtinking dung. Upon opening the abdomen, though the bird was but juſt dead, the fleſh ſmelt very ſtrong, and the fat around, which was conſiderably yellow, ſent forth a diſagreeable nauſeous ſtink. There was a great quantity of bile in the ſmall inteſtines, ſtuffed with a number of air-bubbles. The large ones were likewiſe filled with it, and contained ſtill a little fæces about the anus. On opening the ſtomach, I found the bolus of opium in it ſtill entire, and not the ſmalleſt particle of it, that I could diſcern, had deſcended to the inteſtine. A ſmall particle of it only remained in the gorge, mixed with a humour of a pungent ſmell, in colour like the ſcourings of fleſh. The ſtomach was principally contracted around the bolus, and its interior callous hairy coat was ſeparated in ſuch a manner, from the reſt of the fleſh of the ſtomach, as if it had been touched with a cauſtic; ſo that, on being gently

gently ſtroaked, it entirely fell off. The blood was quite fluid, and not at all grumous; being ſuch as I took from the cavities of the heart, and the parts adjoining, and in which many little drops of oil appeared to ſwim about, whilſt it yet remained in the veſſels. Immediately when I ſaw theſe, at the time of my making my firſt and ſecond experiments, I ſet about making another trial, the reſult of which is well worthy of attention; for the bolus of opium, when extracted from the ſtomach and gorge of the dead quail, weighed exactly, as it did at firſt, twelve grains. I then gave this very ſame bolus to another very lively quail. But this quail, although it ſeemed at firſt a little giddy, recovered again, and appeared as lively as ever. It lived as long as I choſe to keep it, quite lively, and ſeemed to ſuffer nothing for a month and upwards. As I muſt haſten back to the ſubject of the Sciatica I firſt ſet out upon, and avoid, as much as poſſible, any deviation, I cannot give myſelf time to recol-

lect all the experimental proofs I have. However, it will be enough for my purpoſe, if thoſe I have already produced, evince, that the uſe of opium generates bile, and cauſes a greater quantity than uſual to flow into the inteſtines.

44. Opiates, therefore, alleviate a pain that is too ſevere to be borne, and are uſed principally in that Sciatica which is owing to venereal cauſes, and will not yield to the common remedies. This Sciatica is by far the moſt obſtinate of all, and the moſt troubleſome in the night. In all the practice I have had, in numbers of caſes of this kind, I never found any of the remedies I have hitherto mentioned of any conſiderable ſervice. For bleeding, I obſerved, ſcarce eaſed the pain at all, and in no ways prevented the diſeaſe from increaſing; and purges too have juſt as little effect. Frictions, I obſerved, even of the moſt gentle kind, were prejudicial; for the lameneſs was always encreaſed by them, and the motion of the leg became more

more painful. Opiates alone contributed to eaſe the pain. But the beſt and firmeſt foundation for a cure was in Mercury. Therefore, when it appeared that it was a venereal virus that preyed on the Iſchiadic Nerve; (of which we may judge pretty ſhrewdly, if a perſon that was affected with the *Lues* is ſeized with a Sciatica which does not yield to the common efficacious remedies) I then began to uſe Mercury, however not without caution. *Mercurius dulcis*, ſeven times ſublimed, anſwered my purpoſe many times very well; I gave my patient about ten grains of it, with an addition of an equal portion of Ceruſs of Antimony mixed with honey, in the evening; and about a quarter of an hour after made him drink a pint of a pretty ſtrong decoction of Guiacum wood. Within the fortnight, I found that this ſpecies of the Nervous Sciatica, as well as other ſimple venereal pains, and thoſe terrible ones that reſide in the nerves which are called *Oſteocopos*, and falſely attributed in general to the bones,

bones, were in general totally routed. Sometimes I perfected the cure by exciting copious ſweats, or cleanſing the belly; but notwithſtanding the urine became more thick, I ſeldom ever could perceive any excretion of diſturbed humours. If theſe things which I have mentioned do not effect a cure (which may be the caſe, as I have often known them fail in a confirmed venereal Sciatica) I think we muſt try what ſalivation will do; though I will not pretend to praiſe its efficacy, as I have tried it without ſucceſs. Therefore, in this, as well as in other obſtinate Sciaticas, we muſt fly to other remedies, that are more ſafe in their operation, and more efficacious.

45. When it ſo happens that the Sciatica does not yield to remedies already enumerated, or has gained ground by being neglected, it is then arrived to that ſtage in which a confirmed and completed dropſy has taken poſſeſſion of the Vaginæ of the Iſchiadic Nerve (33). Here art

ſeems to have been hitherto tired amidſt a number of daring and fruitleſs attempts to find out a method of cure: for this terrible lingering diſorder has been venturouſly combated with two medical weapons, ſuch as very ſharp clyſters, and cauſtics; both which have harraſſed the patient, already ſufficiently tortured, with new racks of pain, and proved fruitleſs remedies, and more excruciating than the diſeaſe itſelf. Thoſe very ſharp clyſters were thought to be proper, in order to draw the humour collected in the hip to the inteſtines; and the ſtrange varieties of clyſters which Phyſicians have racked their brains to invent, are ſuch as, though I know them all, I will paſs over in ſilence, as being one part of them uſeleſs, and the other part prejudicial. There are two preparations of clyſters that are greatly in vogue amongſt our Quacks and Ruſtics: for ſome mix a quantity of the milk of Spurge with a decoction of Elder, and inject it by the Anus with great perſeverance, till they produce bloody diſcharges;

charges; others prepare a great quantity of a ſtrong decoction of Bryony, and in one or two mornings inject ſo many clyſters of it following, till the inteſtines void pure blood, accompanied with the moſt exquiſite tortures. I will ingenuouſly confeſs that I have known ſome cures performed by means of theſe; and have even heard of many from men of credit. However, I always ſhuddered with horror whenever I was preſent at any of theſe operations, and lamented the miſerable condition of the patients, which I have ſeen almoſt expiring under the racks of pains cauſed by ſuch clyſters; but was more touched with pity for thoſe who, after having undergone thoſe new kind of tortures, ſtill retained the diſorder as bad as ever. Methinks I have now before my my eyes the poor woman whom I once ſaw under this operation. She was about fifty years of age, and the mother of many children, and was ſeized with the Poſterior Nervous Sciatica of the right ſide, about the month of July. Within the

ſpace

ſpace of two months ſhe had had blood drawn plentifully from her feet, and Anus, at three different times; ſhe had taken repeatedly very ſtrong purges; and was fruitleſly tortured by her Phyſician with a plaiſter of reſin of Pine, Maſtich, and Olibanum, which was applied behind the great Trochanter of the thigh, where the pain chiefly lay. At laſt a Quack adviſed her to make uſe of a very ſingular kind of clyſter, prepared of ſtrong Wine, a little oil of Olives, and half an ounce of Galen's Hiera Picra. Immediately as the clyſter was injected, ſhe was ſeized with various violent convulſions, and became inſenſible; in this ſtate ſhe remained almoſt two hours, with a pulſe ſo low as ſcarcely to be felt. Neither did ſhe recover until the inteſtine was waſhed with repeated clyſters of milk, and ſoft cataplaſms of mallows had been applied to the abdomen continually. Notwithſtanding ſhe repeated the clyſters of milk, the pains of the abdomen did not leave her for many days. The Sciatica ſtill remained in *ſtatu quo*, and

and was cured at laſt by a method which I ſhall briefly relate.

46. After all theſe fallacious experiments, which Phyſicians have tried with clyſters*, their laſt refuge, cauſtics, were found not to ſucceed much better. For cauſtics ſeemed, and indeed were very proper to draw out the matter of the Sciatica: however, by their not knowing two things; in the firſt place, that ſpecies of Sciatica where alone it can be of ſervice; and in the ſecond, the part where they ought to be applied; it was but ſeldom, and owing rather more to chance, than judgment, that ever they ſucceeded. Neither are cauſtics of uſe in every Sciatica, for that which is arthritic, commonly eludes every kind of cauſtic. I remember a perſon who had a fixed pain for ſix months, in a part a little below where the thigh joins to the hip; and

* Confer Hippocratem de affec. cap. xxx, pag. m. 179; & Cæl. Aurel. p. 553.

notwith-

notwithſtanding he was bliſtered thrice, and burnt twice, he ſtill retained the diſorder; at laſt an abſceſs formed deep under the inner Glutæus muſcle, as a deep ſection plainly demonſtrated. However, though cauſtics have a wonderful effect in curing the Nervous Sciatica (51), if they are not applied to the proper parts they are entirely uſeleſs. To corrobrate this truth, I will relate a ſingular ſtory of a man of about thirty years of age. He was of a bilious conſtitution, and minded not fatigue in any weather, to follow the diverſion of hunting. In the month of January, in following this favourite ſport, he paſſed ſeveral rough craggy places in a deep ſnow, and was ſeized with ſuch a violent pain in his right hip, which extended even to the foot, that he could ſcarce return home to put himſelf to bed. When at home, ſome days before the Phyſician was called, neither fomentations nor ointments (in the uſe of which women are generally induſtriouſly headlong) were ſpared upon him: but all their applications

applications were without effect, and the pain increaſed every day. When the Phyſician came, he ordered the Iſchiadic Vein to be opened, and human fat to be rubbed into the painful part. This was not more ſucceſsful than the other methods he had tried before; ſo that he was blooded a ſecond, and a third time, and had that δραστικιότατον, decoction of Bryony, injected as clyſters. No inconſiderable dejection of blood followed in conſequence of theſe clyſters; however, on the ſeventeenth day the diſorder did not ſeem to be alleviated ſo much as to have put on another appearance. For, as it was before conſtantly painful without intermiſſion, and exacerbated in the evening; now, as though it had loſt its power of acting by day, it began to rage bitterly only in the night: ſo that the patient was very eaſy all the day, but paſſed the night in watchfulneſs, ſhrieks, and complaints, and could not get the leaſt reſt before the dawn of the morning. Here, indeed, the Phyſicians left no method untried, that

art

art could invent, to give him eaſe. For (not to be too prolix) he was burnt twice very deep with a hot iron, in the part which was affected, behind the greater Trochanter of the thigh: he was twice completely ſalivated; and had clyſters of a decoction of Bryony injected many times, till dejections of blood followed. But all theſe had ſo little effect, as ſcarcely to obtain a trifling intermiſſion of pain for one night. In this condition he came to Naples. Upon examining the obſtinacy and intenſity of the diſorder, which had baffled the moſt powerful remedies, and ſcarcely yielded at all to any of them; I ordered the ſkin of the part affected to be paſſed with a Seton, and gave him, for near three months, a conſiderable quantity of Mercurius dulcis with Antimony, ſo as to excite a copious ſaliva: however, the diſorder ſtill remained as bad as ever. At laſt the patient, tired out rather more by the methods of cure than by the diſorder, departed from Naples. Hence it is manifeſt that the Cautery, which I

ſhall ſhew has the power of curing this very Sciatica, if applied to the proper place (54); when improperly applied, though the ſore be deep, is of no ſervice. This I have ſeen confirmed by various examples, which I ſhall now paſs over in ſilence. All other cauſtics have juſt as little effect (50, 52). Hence we find that this Cautery, commonly applied in the Sciatica, behind the great Trochanter of the thigh, which *Severinus**, on the authority of *Dioſcorides*, calls *Arabica*, Arabian; is ſeldom, if ever, cried up by ſkilful Phyſicians as a good remedy, or any cures related that were performed by it.

47. The fallacious or inconſtant utility of theſe remedies in the confirmed Poſterior Nervous Sciatica, has given riſe to this vulgar ſaying, That perſons ſeized with this Sciatica are in the clutches of an incurable diſorder. As examples of this have occurred to me very frequently,

* Pyrotechniæ Chirurgicæ, cap. 1.

I be-

I began to conſider with myſelf, ſomewhat in the following manner.—The fluid, which is impregnated with an acrid matter, and is too redundant in the Vaginæ of the Iſchiadic Nerve, diſtends thoſe Vaginæ, and renders them dropſical, (27, 33). But if this dropſy neither yields to bleedings, purges, clyſters, nor frictions, it muſt conſequently have cloſed up the orifices of the abſorbent veins on the inſide the Vaginæ: for if they had been open, they muſt neceſſarily ſuck up, and draw from the part into which they open, whatever humour occurred, eſpecially when the body is emptied by evacuations, and the reſiding humour ſet in motion by the frictions. Therefore, what more ſucceſsful method remains to be invented for the cure of this obſtinate diſorder? Why not that very ſame which is purſued in the dropſy of the breaſt, the abdomen, or any other part of the body; when the abſorbent veins are, perhaps, blocked up in the ſame manner, and when other remedies were of no kind of ſervice?

Suppoſe ſuch a perforation of the hydropic place, as that the collected humour, without the help of the veins, may be drawn out at it, by a more open paſſage. But who could bear to have a nerve perforated? (for the nerves are buried in the fleſh, through which you muſt firſt paſs before you can come at them:) and then to paſs it ſafely, though I rather think it ſomewhat dangerous, what operator can ſo guide his inſtrument as to be certain of touching the nerve he aims at? or who can perforate the Vaginæ of the nerve, without wounding its fibres? and who will anſwer for a ſizy humour's flowing out from a paſſage ſo narrow and ſo compreſſed on all ſides?

48. Here, a man, who has not applied to the ſtudy of anatomy, will be apt to pronounce, as many eminent Phyſicians have done, that a confirmed Poſterior Nervous Sciatica is not curable by any method whatever. For what can be greater madneſs, than to inſtitute a method of

of cure, which is more dangerous than the diſorder itſelf? But anatomy has led me to think and experience otherwiſe: for a perforation of the Vaginæ of the Iſchiadic Nerve, which is the only efficacious remedy that remains to be tried for the cure of this Sciatica, is far from being ſo difficult an operation; for the obſtacle which is thrown in our way by the muſcles which protect the nerves, is in the Iſchiadic Nerve, whoſe Vaginæ we want to come at, removed, as the muſcles in many parts of it are wanting. And I have before fully demonſtrated, that the part of the Iſchiadic Nerve, which is the ſeat of the Poſterior Nervous Sciatica, is, to the head of the Fibula, the bottom of the Tibia, and the back of the foot, deprived of a guard of muſcles, and only covered with teguments. Therefore, in theſe parts, the Vaginæ of the Iſchiadic Nerve can be perforated by only penetrating the ſkin, without wounding any muſcles. As I thought of theſe things at firſt, another quære, and no inconſiderable

one, ſtarted up: which was, by what method the Vaginæ of the Iſchiadic Nerve could be perforated in thoſe ſubcutaneous parts of it, without running a great riſk. If it is attempted by puncture, there is great reaſon to fear the danger of wounding the nervous filaments, together with the Vaginæ; and, by bringing on a convulſion, of deſtroying that part of the body which you intend to free from pain: and if they are perforated ſideways, the danger is pretty nearly the ſame. Beſides, the humour which lines the Vaginæ is of a ſizy quality, ſo that if you would evacuate it, the Vaginæ are not only to be opened, but the encloſed humour is to be attracted of its own accord, and, as it were, entirely drawn toward the aperture. As I often ſcanned theſe things over in my mind, I began to think that the aperture ſhould not be made by a cutting inſtrument, but rather by a cauſtic bliſter. By means of this it ſeemed highly probable that my moſt ſanguine hopes would be fully anſwered; for if the Vaginæ were

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to be opened in ſuch a manner as to let out the encloſed humour, a bliſter certainly could open them, by ulcerating the ſkin, or draw the humour, as it were, by an aperture. For if the ulcer of the ſkin, cauſed by the bliſter, reached the Vaginæ underneath, it would immediately cauſe an evacuation of it: if it did not reach the Vaginæ, but only bliſtered the ſkin, yet, as the pores of the ſkin communicate with the pores of the Vaginæ, by drawing it to the pores of the ſkin it would alſo evacuate the Vaginæ. I have many experiments at hand to prove the power of attraction of the ulcers which are cauſed by bliſters; for I never knew a pain, cauſed by an acrid matter in thoſe parts of the nerve which lie under the ſkin, but vaniſhed on applying a bliſter there; of which I can produce ſuch a number of obvious examples, that was I to relate any of them it would be quite abſurd. However, they demonſtrate clearly, that the humour is attracted from the parts underneath, and flows off by the ulcer of the ſkin.

49. It cannot be objected, that the diſcontinuation of the pain does not prove the attractive power of the ulcer; as though the matter underneath, by being put in motion by the ſtimulus of the bliſter, may be diſſolved and eaſily reſorbed again into the blood; or by the contraction of the ulcerated ſkin be ſo compreſſed as to force itſelf a paſſage into the ſanguineous veins. For all theſe ſuppoſitions are partly contrary to reaſon, and partly to experiment. For the ſkin, however contracted by means of the ulcer, cannot force the matter by compreſſion in ſuch a manner, as to cauſe it to paſs into the ſanguiferous veins. For if alternate preſſure, ſuch as that which is cauſed by friction, is hardly able to effect this, how can the ulcerated ſkin perform even alternate preſſure by means of palpitation? But let us turn to experiments. There is a kind of malady ariſing from the Lues Venerea, which is ſeated in the bone, and commonly called *Gummi*. This is cauſed by the venereal Virus inveſting the Perioſtæum, and inflaming the membrane;

ſo that the ſtimulus cauſing a conflux of humours, it ſwells: but theſe humours acquire gradually, by the force of the poiſon, a nature ſomewhat like that of bacon fat, and form an aſſemblage, for the greateſt part, between the Perioſtæum and the bone. The ſubſtance of the bone, by being in contact with theſe, is gradually corrupted, as alſo the Perioſtæum itſelf, and oftentimes the adjoining fleſh. It is to be wiſhed, that (as indeed it does frequently happen) when thoſe Gummi form, it may be in thoſe bones which lie immediately under the ſkin. For if the bliſter is applied in thoſe parts, conſtant experience, to this day, in more than a hundred inſtances, has taught me that they are not only reduced, and hindered from increaſing, but the pain, which was before very ſevere, ceaſes, and the tumour itſelf gradually ſubſides, as the ulcer weeps: but that at laſt, by keeping the ſore open, the ſound parts only remain, and the Gummi entirely vaniſh. I have often known Gummi ariſing in the Forehead, in the hairy part of the Calva, in the

the middle of the Sternum, in the upper ſpinal proceſſes of the Vertebræ of the Back, in the exterior part of the Olecrenum Ulnæ, and in the anterior front of the Tibia, conſtantly vaniſh, as the ulcer, excited by the application of a bliſter, weeped. It is of no ſignification to produce a multitude of inſtances of ſuch kind of cures, which will never gain me ſo much credit, as I ſhall obtain with ſuch as are willing to make the experiment themſelves in this common diſorder. I will only add, that bliſters have cured even Gummi when ariſing, as well as when they had attained a conſiderable bulk: and although it may happen that the diſorder is not entirely cured by the ſore of the firſt bliſter, yet a ſecond ſeldom fails of conquering it totally. Now I have no doubt but that theſe cures, which are performed by bliſters in venereal Gummi, will evidently prove the great efficacy of them in drawing out the humour ſtagnating in the parts that lie under the ſkin, and evacuating them by means

means of the ſore; for if the *Gummi* is cured, what is become of its viroſe humour? Is it turned into the blood? ſince it returns again, notwithſtanding mercurial plaiſters, or mercurial ointments, are applied over the part, or rubbed into it, when the ſkin is whole. But as the Gummi, according to this notion, muſt mingle its poiſon with the blood, what miſchiefs may it not occaſion? Let ſome examples lead to the conviction of the truth, if they can. A ſoldier, about thirty years of age, had two pretty large Gummi, grown on the right ſide of the Calva, near the temple. The Chirurgeon ordered the hair to be ſhaved off, and the elevated part of the Gummi to be rubbed firſt with mercurial ointment, and then to be covered with a plaiſter with double the quantity of mercury. On the ſixth day the Gummi vaniſhed; but in a day or two afterwards the patient was ſeized with a violent pain in his head, attended with a want of ſleep, and had moreover a fever. His Fauces were inflamed, and he could not ſwallow.

Whilſt

Whilſt he was in this ſtate, a violent Diarrhœa came on upon him ſpontaneouſly, and ſaved his life.—Another caſe, which I ſhall relate, had a worſe event. There was a man about fifty years of age, who was troubled with a Gummi in the extreme anterior part of the true third rib, where it joins to its cartilage. He came lately to the hoſpital: he was ordered to rub the Gummi with mercurial ointment; he did ſo for five days: the Gummi was diſſolved and diſappeared; but immediately after, he was attacked with a violent fever. At firſt he had a heavineſs in his head, then was drowſy, and convulſed now in one part, and then in another, but eſpecially in the eye-lids; his pulſe was low, his breath ſhort, and all his ſenſes oppreſſed. The patient died before eight-and-thirty hours. Upon opening the abdomen, we found under the Peritonæum a ſmall abſceſs formed on the right Iliac veſſels, full of an ichorous humour, which turned under the *Fallopian* Ligament towards the ſeat of the Semen. We found the

the breaſt without blemiſh, and found in the part where the Gummi was, a cavity in the bone, filled with a ſanguineous humour. In his head, under the Dura Mater, and between it and the brain, there was a prodigious and enormous quantity of whitiſh Serum collected. In the brain, between the Arachnoides and the Pia Mater, there was a wonderful collection of Pus in every part all around the Cerebrum and Cerebellum, which had a greeniſh caſt, and was ſo thick that it might be ſcraped off in pieces, and would not drop. Was it not owing to the matter of the Gummi being repelled, and thrown to the head by means of the frictions, that the patient died? There was never ſuch a conſequence ever followed the cure of Gummi by a bliſter. Indeed, the numerous examples I can produce of Gummi being cured by means of a bliſter, without any evil conſequence attending, have either led me into an error; or theſe cures clearly prove, that in the Gummi, which are cured, the poiſon is drawn out

of

of the body, and does not paſs into the blood.

50. Therefore bliſters, if they excite a ſore, draw the humours underneath to the part which is exulcerated, and evacuate them. So that I cannot ſee a reaſon why bliſters ſhould not be applied to the evacuation of the Vaginæ of the Iſchiadic Nerve, on the ſubcutaneous parts of it; where they might act, and draw the humours to the ulcer. Reaſon at firſt perſuaded me to make an experiment of this; but afterwards, as I thought more of this matter, ſome vague remarks which occurred to me amongſt the antient, and ſome obſervations of the more modern Phyſicians, induced me to apply myſelf cloſely to the ſtudy of it. I met with inſtances of this Sciatica's being cured by chance, without any rational methods being laid down; ſo that, as they ſeemed to have adopted no ſettled principles, I thought that this method I have followed would help to lay a proper foundation. For

Galen curſorily mentions the cure of a Sciatica, which returned every now and then, at ſhort intervals, for the ſpace of four years; and he ſays the man was cured by a wound which he received in his ancle, in which the artery was divided*. I imagine that this wound in the ancle cured the Sciatica, becauſe it evacuated the Vaginæ of the affected nerve, and happened to be in that very part where it runs†. But *Paulus*, from *Ægina*, who depended much on the actual Cautery in the cure of the Sciatica, amongſt parts he would have burnt, has chiefly pointed out the place above the exterior ancle; which method, perhaps, ſucceeded ſometimes, for this reaſon, Becauſe it was that ſubcutaneous part of the Iſchiadic Nerve, which deſcends by the ancle. But *Albucaſis* ſeems, of all others, to offer the moſt rational obſervations; for he recommends the Cautery in that Sciatica where pain reaches even to the toes, and to burn three

* In libro de ſang. miſſione.

† De re Medica, lib. 6, cap. 76.

or

or four points, or more if neceſſary, of the part where the patient ſhews the pain chiefly lies*; upon the very nerve, if the pain happens to follow its track. Indeed, I was very well pleaſed to find theſe obſervations, which were ſcattered amongſt the antients: they ſeemed accidentally to have prepared the way for me, and by chance, to have held out a light to invite me to the inveſtigation of the truth: there are ſome better obſervations alſo to be met with amongſt the more modern Phyſicians. *Altimarus*, who flouriſhed about the middle of the ſixteenth century, patched together, indiſcriminately (as medical writers of our days commonly do) a number of cures for the Sciatica; and at laſt recommends, as the ultimate remedy for a continual pain of the hips; "*Igne ſub genu externa in parte inuſtionem efficere*;" to burn on the outſide part of the leg, under the knee, with the actual cautery†. *Johannes Zecchius*, who lived a little

* Libro primo, cap. 43.

† De medendis Hum. Cap. morb. cap. 118.

after

after him, highly recommends the ſame thing; "*Paullo ſubtus genu, in parte exteriore lateris affecti Cauterium inurendum**." But why is that part the moſt proper to be burnt? Is it, as *Zecchius* ſays, for the ſake of *derivation?* But why is not the Cautery equally as uſeful in any other part adjoining? Is it not becauſe, "*in parte exteriori affecti lateris, paullo ſubtus genu,*" on the outſide of the leg, a little below the knee, on the ſame ſide which the pain inveſts; he cauteriſes the very part under which the Iſchiadic Nerve runs ſubcutaneous to the head of the Fibula, and lays open the Vaginæ in a proper place? *Adrianus Spigelius*, though he ſets out upon a falſe hypotheſis, has yet turned it to a happy purpoſe, and found out full as proper and clever a part for the cautery: as he makes the ſeat of the Sciatica to be (with *Hippocrates*) in the crural veins (5); he adviſes an iſſue to be made between the parts where the gaſtrochnemius muſcle riſes, where the

* Conſult. Med. 43.

Vena poplitæa deſcends *. *Scultetus* himſelf experienced the happy efficacy of this method of cure; for after he had tried various remedies to no purpoſe, he was not only cured of the Sciatica for the preſent, by means of this iſſue, but for a number of years he never had any return of it. Therefore he did not heſitate to affirm, that, *ubi tam interna quam externa remedia ſine ſucceſſu in hoc fuerint morbo uſurpata, tanquam ad ſacram anchoram ad fonticulum in hac ſede excitandum confugiendum eſſe* †: Where external, as well as internal remedies, have been tried in this diſorder without ſucceſs, we muſt have recourſe to an iſſue, which is to be opened in that particular part, as the anchor of hope. *Johannes Rhodius*, after him, approved of the ſame method ‡. Now, who does not ſee, that this iſſue was not beneficial, becauſe it was near the vein, which is by no means the ſeat of the diſorder; but be-

* De human corp. fab. lib. 5, cap. 9.
† Armament Chirurg. tab. 54, p. 195.
‡ Obſervat. med. can. 3, obſer. 88.

cauſe it was near the Iſchiadic Nerve, which runs along the leg.

52. Theſe obſervations, which I collected from the works of famous writers, firſt gave me the hint of the method of curing the Poſterior Nervous Sciatica, and ſeemed to lay a foundation for me to build on; and it is not eaſy for me to expreſs what great hopes I conceived from thence, of bliſters doing wonders when applied to the ſubcutaneous parts of the Iſchiadic Nerve. For this method which I adopted, now, appeared not to be a bold one, nor entirely new, as ſome eminent Phyſicians had left ſuch remarks and tokens to follow. Nothing therefore remained, to make me heſitate any longer; but I was reſolved to prove, experimentally, whether or no the hopes I had conceived were fallacious. This was very eaſy to be done, as I very frequently met with men who were troubled with this Sciatica. At firſt, therefore, I tried what effect a bliſter would have, applied to the head of the Fibula,

ſo as to cover the whole ſubcutaneous part of the nerve of that ſpot. For as the pain in the Nervous Sciatica is felt in a much greater degree from the hip to the Fibula, than from the Fibula to the foot, I began to think that there muſt alſo be a greater quantity of acrid matter in the Vaginæ of the nerve, from the hip to the Fibula: but if I ſhould attempt to evacuate it, by applying a bliſter to the bottom of the Tibia, and back of the foot, there was ſome reaſon to fear that the length of the way, and the narrowneſs of the nervous Vaginæ in thoſe parts, would hinder the deſcent of the matter, and its evacuation. I therefore ordered a man, about forty years of age, who had been troubled with the Nervous Sciatica for four months and upwards, to apply a bliſter, after the following method, to the head of the Fibula.—I ordered the paſte to be prepared after the common method, about ſix fingers breadth in length, and four in breadth, in a plane form. This was applied, croſs-ways, to the head of the Fibula,

Fibula*, ſo that the middle of the plaiſter covered it entirely, and ſtretched above and below it, but chiefly below: ſo that here the extremity of the one longitudinal end of the plaiſter aſcended to the knee, and the other deſcended to the Tibia. The bliſter was made firm with a bandage. In about four hours time the patient began to feel a moſt painful ſenſation under the bliſter, and the pain of the hip ſeemed abated by it. However, it may be doubted whether this mitigation of the pain in the hip was owing to the bliſter, in that it began to draw the peccant matter from the Vaginæ of the nerve; or to another cauſe: as the more ſevere pain of the bliſter might take off the attention from the leſs violent pain of the hip, and ſo cauſe it to ſeem to be alleviated. In fourteen hours time the bliſter had raiſed a very large bladder; this bladder was cut open, and voided almoſt four ounces of very yellow ſerum. We be-

* Vide Icon adject.

gan to heal the ſore after the uſual method, with freſh butter; it weeped for the ſpace of nine days. A very excellent ſymptom appeared the firſt day; for the patient could ſtand better on his leg, and ſpent the night more free from pain: and as he was kept in bed during the time of the cure, to my great ſatisfaction, he told me the third day that he did not feel any pain about the Os ſacrum, and great Trochanter; but found that it had left the upper parts, and was deſcending gradually towards the ſore of the bliſter. On the ſeventh day the pain was only felt about the ſore, and the thigh was entirely free from it. This deſcent of the pain ſeemed to me to prove, clearly, that the dropſy of the Vaginæ of the Iſchiadic Nerve was gradually making its way through the ſore of the bliſter; ſo that, as the acrid matter deſcended from above to the ſore, it left, by little and little, the higher parts of the nerve free from irritation, till it was entirely evacuated, and the pain vaniſhed with it.

On

On the ninth day the pain from the Fibula to the back of the foot was almoſt entirely gone, and about that time the ſore healed of itſelf; which, as I imagine, was owing to this circumſtance—that by the leg's lying in an horizontal poſition, the humour of the Vaginæ deſcended equally from the hip to the Fibula, as from the Fibula to the foot, and was evacuated at one and the ſame place. From that time my patient was entirely freed from his diſorder, and from all pain.

52. How many experiments I have made with the ſame ſucceſs, beſides this one I have mentioned, my auditors well remember; if I ſhould mention them I am afraid I ſhould be thought to be an empty boaſter. However, I cannot paſs over in ſilence ſome obſervations which I formed on ſuch a number of examples. In the firſt place, I have known the ſerum, when collected by means of the bliſter, to be ſo ſharp as to cauſe an intole-

rable ſenſation of heat to the patient, and ſometimes even to eat through the bladder, and flow out. I knew a young man of about ſix-and-twenty, who was cruelly tortured with this Sciatica, and who had a large bladder, which was raiſed by a bliſter at the head of the Fibula, burſt of itſelf. The ſerum, which flowed from it, in ſtreaming down the leg, excoriated widely every part that it touched. This, certainly, (or I am much miſtaken) affords a pretty clear proof that the matter which cauſes the pain of the Sciatica is of a ſharp acrid nature. There were very few caſes which did not diſtinctly point out the gradual deſcent of that origin of pain towards the knee: I ſcarcely remember above one or two, amongſt all the number of examples with which I am furniſhed. Where the Poſterior Nervous Sciatica was of long ſtanding, it even ſometimes happened that the bladder of the bliſter voided a very thick ſerum like glue: upon which evacuation the old Sciatica generally took its leave of the patient;

patient: ſo that, in patients of this ſort, if this viſcous ſizy humour was voided by means of the firſt bliſter, the diſorder vaniſhed at the ſame time; but if not, and the ſore of the firſt bliſter is healed up, we muſt repeat the application of it, till all the glutinous matter is entirely drawn off. I know many caſes where it was even neceſſary to clap on the third bliſter. I will relate one or two inſtances of this kind. There was a ſoldier, about ſix-and-fifty years of age, who was ſeized in the month of September with a violent pain, of which, as he affirmed, he knew not the cauſe. The pain extended from the Os ſacrum, by the poſterior part of the great Trochanter of the thigh, by the knee, the fore part of the leg, and of the outermoſt ancle, to the back of the foot. A large bliſter was applied to that part where the thigh joins to the hip, where he felt the greateſt pain: but although the ſore of the bliſter weeped a long time, the pain ſtill remained as bad as ever. As a bliſter had no effect, the part

was

was burnt pretty deep with a hot iron; but notwithſtanding this ſore alſo weeped, the pain ſtill remained after it was healed up. At laſt he was compleatly ſalivated; but although the ſalivation was kept up for ſome time, the pain was not leſſened. After all this, and after he had now had the diſorder eleven months upon him, he came to our hoſpital, and was put under my care. As his belly was ſufficiently lax, and the powers of life not very vigorous, we ſpared both laxatives and phlebotomy. I ordered, therefore, a bliſter to be applied immediately to the head of the Fibula. This raiſed a very conſiderable bladder, which breaking of itſelf, voided a conſiderable quantity of fluid ſerum: however, a great deal that was viſcous and coagulated was left behind, inſide the dead ſkin; this I opened and took out. The humour which afterwards flowed out was ſo viſcous, that it glued together the bandages which bound the bliſter, and ſtuck very firm to the adjacent ſkin. About the ninth day the

ſore

ſore was healed up, and my patient found himſelf perfectly cured of his diſorder. —Another man, about four-and-thirty years of age, was ſeized, without any evident cauſe preceding, in the month of February, with a pain in the left hip. The pain followed the ſame track as it does in the Poſterior Nervous Sciatica. After having tried ſuch a multitude of remedies, that he could ſcarce remember all of them, he was adviſed by many Phyſicians to undergo a compleat ſalivation. The patient followed the advice, and was highly ſalivated for five-and-twenty days: however, ſtrange as it was, the pain ſtill remained; though certainly it was in ſome meaſure checked, as it was not ſo violent at nights as before. The patient, tired of his diſorder, and fruitleſs method of cure, was brought, about the beginning of Auguſt, to our hoſpital, and entruſted to my care. The firſt day I ordered him a drachm of the powder of *Sarſa ſolutiva*, together with eight grains of *Mercurius dulcis*. This gave him four ſtools. The next

next day I clapt on a bliſter to the head of the Fibula. On the third day the bliſter had raiſed a conſiderable bladder, which, when cut, voided a very yellow thin ſerum: the pain abated that day. On the eighth day, when the ſore healed, the pain was ſo conſiderably alleviated, that he ſcarcely felt any remains of it in the day-time, though he had ſome ſlight touches of it at night. I therefore applied another bliſter on the ſame part: this alſo raiſed a large bladder, and the matter which flowed from it appeared to be like ſtrong iſinglaſs water: the pain was now found to be ſtill more abated. In eight days time this other ſore cloſed up, but the pain was not entirely ſubdued. I then applied a third bliſter over the part: this excited a bladder which contained near three ounces of a very mucous lymph. The third day after this application, the pain was felt no more.

53. Theſe, and other examples ſimilar to what I have produced, proved to me clearly,

clearly, that, to effect the cure of the Poſterior Nervous Sciatica, it is abſolutely neceſſary to draw out that glutinous tenacious humour, which has perhaps acquired that *Lentor*, by lying long in the Vaginæ of the Iſchiadic Nerve. I imagined that this glutinous nature rather belonged to the morbid humour which inveſts the Vaginæ from the hip to the Fibula, than to that which occupies the ſame Vaginæ towards the foot; for the things that contribute to render this part of the morbid matter, in the long-ſtanding Nervous Sciatica, more fluid, and thin, are, that a great part of the nerve, from the Fibula to the foot, runs under the muſcles of the leg, which, in ſome meaſure, hinders the humour from ſtagnating, and acquiring a Lentor; ſo that it is very eaſy, by means of the ſore at the Fibula, to eradicate entirely the pain that invades the leg down to the foot. The vaniſhing of the pain ſo ſoon from this part, proves clearly that the matter of the Tibial Nerve is ſo thin and fluid, that it is able to aſcend

and

and evacuate itſelf at the ſore, which is raiſed above, at the head of the Fibula. However, I will ingenuouſly confeſs, that I have met with ſome caſes where, notwithſtanding the pain from the hip to the Fibula was entirely conquered, and the ſore healed up, the pain from the Fibula to the foot ſtill remained. When this happens to be the caſe, I generally either apply a bliſter tranſverſely toward the outſide, on the lower front of the Tibia; and with very good ſucceſs: or apply one equally as ſucceſsful tranſverſely, even on the upper part of the back of the foot. I had ſome time ago a great opinion of a bliſter when applied to the back of the foot, and thought it would draw out all the humour that inveſted the Vaginæ above, from the lower parts: but I have learnt, by conſtant experience, that the operation of a bliſter is no where ſo painful as here, nor ſo long in healing on any other part. I have known the patient feel the moſt troubleſome ſenſations all the time the bliſter was operating; and when the

the ſore was formed, not to be able to walk; which was owing, not ſo much to the remains of the pain in the Iſchiadic Nerve (which was generally conquered) as to the troubleſome anguiſh of the ſore. Therefore as a bliſter operates full as ſucceſsfully, and leſs painfully, when applied to the lower front of the Tibia; I do not ſee why I ſhould apply it for the future on the back of the foot.

54. I have now given a full account of all the obſervations I have made on the cure of the Nervous Sciatica, and hope, if I have not been much deceived, that ſuch as are willing to try thoſe experiments will reap great advantage from them. But I would adviſe thoſe who would make themſelves maſters of the things relative to the cure, to conſult thoſe two excellent Anatomical Plates of *Euſtachius*, the 20th and 19th, that they may learn from them, in the firſt place, the deſcent or track of the Iſchiadic Nerve; and by comparing the 19th, with the Plate affixed to the end

of

of this book, underſtand more clearly to what part of the nerve the bliſter belongs, when it is applied to either of the places I have marked out. I have oftentimes been willing to try what effect a hot iron would have on thoſe parts, inſtead of a bliſter; for I had formerly a very great notion, that the power of fire, which is ſo much recommended by the antients, might draw out the matter which inveſts the Vaginæ of the Iſchiadic Nerve ſooner than a bliſter; for the ſtimulus of fire is more active and quick in its operation. There was a report ſome time ago current in Lucania, and not without foundation, that a certain Quack cured this Sciatica by touching the fore part of the leg, four fingers breadth above the exterior ancle, with a hot iron. I ſaw preſently on what theſe cures depended; as under the part which he burnt, lay the ſubcutaneous ſeat of the Iſchiadic Nerve. But hitherto my patients have been ſo much afraid of fire, as they had in general been burnt by others, before, in the thigh, without ſucceſs;

ſucceſs, and as they thought a bliſter a far leſs painful method of cure; that I had never an opportunity of making this experiment. As I have all along found the application of a bliſter anſwer ſo ſucceſsfully, I thought it partly a kind of crime, for the ſake of only making an experiment, to uſe ſuch a rough remedy as fire; and in ſome meaſure judged the operation of a bliſter to be more certain and efficacious. For, notwithſtanding the ſtimulus of fire is more active and quick in its operation, and ſeems to have the power of drawing out the matter from the Vaginæ of the nerve; yet, as the fire forms an Eſchar on the part which it touches, it may hinder, for a long time, the exit of the matter ſo drawn. Beſides, if the humour which is to be drawn out is ſizy, as in a Sciatica of long ſtanding, the ſkin, when burnt, and wrinkled up, may not be ſo properly adapted for excretion: ſo that the actual Cautery ſeems rather more proper for a new, than an old Sciatica. But I do not ſee we

have any occaſion to make uſe of it in a new Sciatica, as it is eaſily cured by a bliſter; and as there is ſome reaſon to fear, that, if it be unſkilfully or incautiouſly applied, inſtead of only exulcerating the ſkin, it may touch the nerve underneath, and burn it. But whoever chuſes rather to make uſe of the actual Cautery, the ſafeſt place to apply it will be the front of the Tibia, which I have pointed out.

55. But, however, I muſt confeſs, that the operation of a bliſter is certainly, of all other parts, the moſt painful, when applied to the ſubcutaneous ſeats of the Iſchiadic Nerve: but the more painful it is, the greater reaſon, I think, we have to expect it to be ſucceſsful. The caſe is ſimilar when the Cubital Nerve is invaded with the pain; for I have known a bliſter applied to the painful part, according to the length of the arm, cure thoſe obſtinate tortures. I have already five inſtances of this kind. Whilſt the bliſter is riſing, the

pain

pain is very conſiderable; but after all the humour is evacuated which inveſted the Vaginæ of the Iſchiadic Nerve, the pain entirely vaniſhes. I imagine that, during the Sciatica, the ſlime of the Vaginæ conſolidates between the cellular Laminæ, and by that means encreaſes the thickneſs of the Vaginæ; they are therefore rendered ſtronger, and leſs liable to ſuffer again from the Sciatica: but this Sciatica is, in other reſpects, very apt to return. Although I never yet met with an inſtance myſelf of the Sciatica's returning after I had cured it by a bliſter.

56. The Semi-palſy is the laſt ſtage of the Poſterior Nervous Sciatica; and the following are the obſervations I have made upon it. When the diſorder is only attended with a pain, and that pain is cured by a bliſter, the leg regains its former ſtrength. If the pain had gradually abated, and an emaciation and torpor of the leg remain behind; I have found friction here to be the only remedy. I

therefore order the exterior and poſterior part of the thigh, where the Iſchiadic Nerve runs, to be rubbed all along, every morning, with rough linen cloths; and after the friction, to baſtinado the ſoal of the foot with leather thongs. This is to be repeated for ſome time. The patients have alſo found benefit from drinking a decoction of Guiacum in the evening. By following this method, I never knew a very obſtinate Macies cured; but have found that the muſcles of the leg have gained a little ſtrength by it.

57. Now, as I have made theſe obſervations on the Poſterior Nervous Sciatica, (which is by far the moſt common diſorder of the two) it remains that I ſay ſomething of the Anterior (which is not ſo common, and leſs troubleſome.) This Sciatica attacks the Crural Nerve, and the pain evidently follows its track: it is generated by the acrid matter which has inſinuated itſelf into the Vaginæ, and which has the ſame origin as that of the

Iſchiadic Nerve. As the Crural Nerve is ſurrounded on all ſides with muſcles, and its Vaginæ are, as it were, exerciſed by their alternate preſſure, the matter is prevented from ſtagnating, and the diſorder conſequently of ſhorter continuance. I have often known this Sciatica exacerbate at night; and have known it intermit. Like the Poſterior, it has been found to be of longer continuance, and to grow more ſevere in warm weather, or by warm applications; and to be more gentle in the day-time, in ſerene or cold weather. It has often ariſen by a man's receiving a violent fall on either ſide; of which a man of ſixty is an inſtance, who got both the Poſterior and Anterior Sciatica by a fall. I never make uſe of cauſtics in curing this Sciatica, for it is always conquered by bleeding, as you ſee occaſion, in the hæmorroidal veins, or the foot; and then by looſening the belly in the morning with common clyſters. If I have any ſuſpicion of a venereal taint, I always make uſe of thoſe remedies which

I have already mentioned, at (44), in the evening; if not, I recommend gentle frictions, or riding (41), to diſſipate the humours. Here, as well as in the Poſterior Sciatica, if the patient would reſt comfortably, he ſhould not lie on a woollen bed, but on a ſtraw or hair mattreſs. By lying in this manner, I have known the nocturnal pains of this diſorder, as alſo thoſe of the Rheumatiſm and Arthritis, abate conſiderably, and the patient ſleep more eaſily and comfortably.

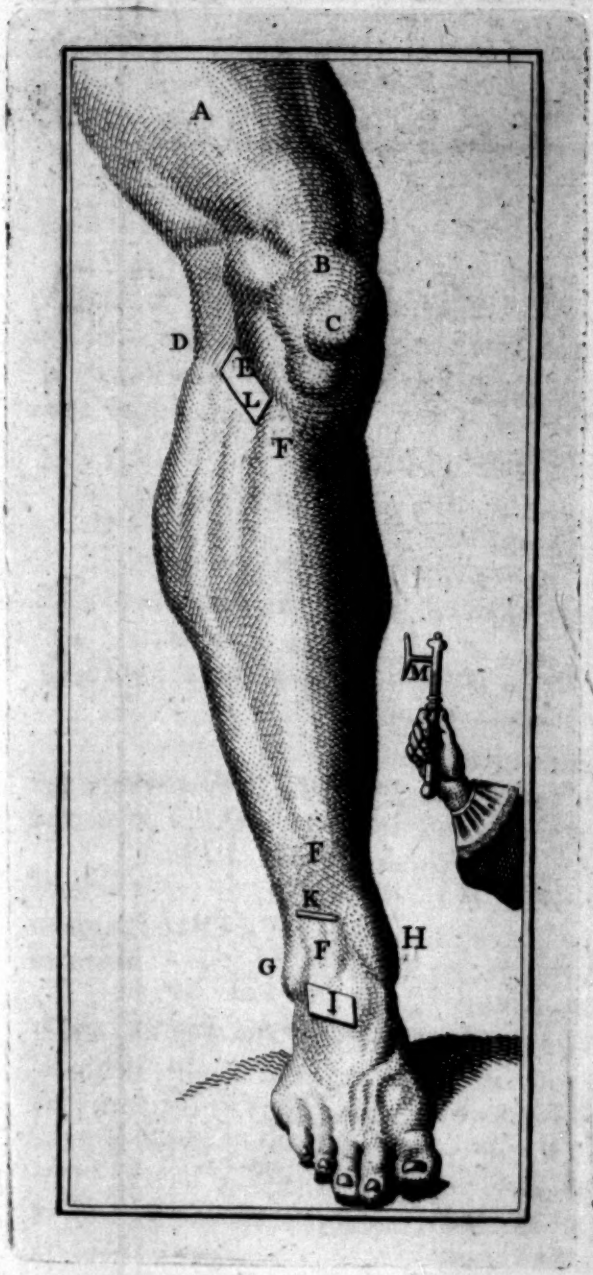
Such are the obſervations, illuſtrious *Swieten!* on the Nervous Sciatica, which I have addreſſed to you; where, in reſpect to the greatneſs of the ſubject, I may, perhaps, appear to have been inelegantly and lamely conciſe; but in reſpect to the difficulty of treating a matter entirely new (which would not be an eaſy work for men of the brighteſt genius, much leſs ſo for me, who have no abilities to boaſt) I may ſeem to have ſaid more than

enough. In this untrodden and unbeaten path, I have walked without a guide or companion. At my own peril I was to penetrate theſe unknown regions, and travel boldly to draw out truth from obſcurity. I hope thoſe learned men, whoſe underſtandings are better ſupplied than mine, with aſſiſtance to undergo this toil, will make up the deficiencies of theſe remarks, which are certainly not few; and will illuſtrate ſuch things as I have not ſufficiently explained. I ſhall look upon myſelf as amply recompenſed, if what I have here offered ſhould incite men of abilities to give the public their own obſervations. This, illuſtrious *Swieten!* I think, is chiefly to be expected from you, when you finiſh what I impatiently expect, your immortal Commentaries on Boerhaave.

AN EXPLANATION OF THE FIGURES OF THE PLATE.

THE Plate repreſents part of the Thigh, with the Leg and Foot, in order to mark out the places where the bliſter is to be applied, that it may be on the principal ſubcutaneous parts of the Iſchiadic Nerve.

A, Part of the Thigh to the Knee.
B, The Knee.
C, The ſeat of the Rotula.
D, The Poples, or Ham.
E, The heat of the Fibula.
F F F, The anterior ſpine of the Tibia.
G, The external Ancle.
H, The internal Ancle.
I, The part on the back of the foot where the extremity of the Crural portion of the Iſchiadic Nerve runs ſubcutaneous.
K, The ſeat, in the lower part of the front of the Tibia, where the ſame Crural portion deſcends ſubcutaneous, juſt as it emerges from the muſcles.
L, The ſeat at the head of the Fibula, under which a Crural portion of the Iſchiadic Nerve turns ſubcutaneous to the fore part of the leg, juſt as it ſeparates from the trunk.
M, The Iron inſtrument, when the part K is to be burnt.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FINIS.